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THE

AMERICAN JOURNAL

OF THE

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VOL. XII.

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PHILADELPHIA:
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TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. Monet, Joslin, Lee, Zollickoffer, Charlton, M'Dowell, and Fitz Gibbon.

Dr. Barrington's interesting paper is in type, but we were compelled to omit it for want of room.

We have the pleasure to announce that the Cyclopedia of Practical Medicine and Surgery is now in press, and the first No. will appear on the 1st of June next.

The following works have been received:—

A New Dictionary of Medical Science and Literature, containing a Concise Account of the Various Subjects and Terms; with the Synonymes in Different Languages; and Formulæ for various Officinal, and Empirical Preparations, &c. &c. By Robley Dunglison, M. D. Professor of Physiology, Pathology, Obstetrics, and Medical Jurisprudence in the University of Virginia; Member of the American Philosophical Society; of the Royal College of Surgeons, of the Medical, Hunterian, and Apothecaries' Societies of London; of the Medical, Pharmaceutical, and Linnæan Societies of Paris; of the Physico-Medical Society of Erlangen; of the Royal Society of Nancy, and of the Royal Academy and Academic Medical Society of Marseilles. Boston. Published by Charles Bowen. 1833.

An Introductory Lecture delivered on the 31st of October, 1832, in the Chemical Hall of the University of Maryland. By Julius T. Ducatel, Professor of Chemistry, Member of the American Philosophical Society, &c. &c. Baltimore, 1833.

Address delivered before the Louisville Medical Society, at their Annual Meeting, January 1st, 1833. By John P. Harrison, M. D. (From the author.)

Some Account of the Asiatic Cholera, Cholera Asphyxia, or Pulseless Plague; with a Sketch of its Pathology and Treatment, and Advice relative to its Prevention on Plantations, Premonitory Symptoms and Treatment. By Samuel A. Cartwright, M. D. of Natchez, Miss. (From the author.)

Dissertationes de Inflammatione Corneæ transparentis scrofulosa part prior, quam pro licentia, summos in arte medica honores postea rite capessendi, publico eruditorum examini Submittit auctor Fredericus Ferdinandus Mourier, Chirurgiæ, et Medicinæ Canditatus.

Conspectus Remediorum et Operationum, Hæmorrhagiis externis coercendis inservientium, particula prior, introductionem, caustica, styptica et absorbentia continens, quam pro Licentia summos in arte medica honores postea rite capessendi, publico eruditorum examini modeste submittit auctor Carolus Petrus Mathias Hansen, Chirurgiæ et Medicinæ Canditatus.

Litterarische Annalen der Gesammten Heilkunde Herausgegeben von Dr. J. F. C. Hecker. May, June, July, August, 1832. (In exchange.)

Bibliothek for Læger. Redigeret af dens Medlem G. Otto, M. No. 3, 1832.

Archives Générales de Médecine. October and November, 1832. (In exchange.)

Transactions Médicales. September, October, November, and December, 1832. (In exchange.)

Journal Universel et Hebdomadaire. 109 to 122. (In exchange.)

Revue Médicale. October and November, 1832. (In exchange.)

Mémorial Encyclopédique et Progressif des connassances Humaines. October, November, 1832. (In exchange.)

The Edinburgh Medical and Surgical Journal, for October, 1832, and January, 1833. (In exchange.)

The Medico-Chirurgical Review, for April, July and October, 1832, and January, 1833. (In exchange.)

The London Medical and Surgical Journal, for September, October, November, and December, 1832. (In exchange.)

The London Medical Gazette, December, 1832, January and February, 1833. (In exchange.)

The London Medical and Physical Journal, for October, November, and December, 1832. (In exchange.)

The Medical Magazine. Vol. I. Nos. 7 and 9. (In exchange.)

The Boston Medical and Surgical Journal. Vol. VIII. Nos. 1 to 10. (In exchange.)

The Western Journal of the Medical and Physical Sciences. January, 1833.

The Transylvania Journal of Medicine and the Associate Sciences, for July, 1832, January and April, 1833. (In exchange.)

The Western Medical Gazette, Vol. I. Nos. 3, 4, 6, 7.

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication, should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "Carey, Lea & Blanchard, Philadelphia, for the Editor of the American Journal of the Medical Sciences."

All letters on the *business* of the Journal to be addressed exclusively to the publishers.

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Traité Complet de Physiologie de l'Homme. Par Fred. Tiedemann, Professeur d'Anatomie et de Physiologie à l'Université de Heidelberg. Traduit de l'Allemand; par A. J. L. Jourdan, D. M. P. Première et deuxième partie.—Physiologie Générale et Comparée. Paris, 1831. pp. 798. 8vo.

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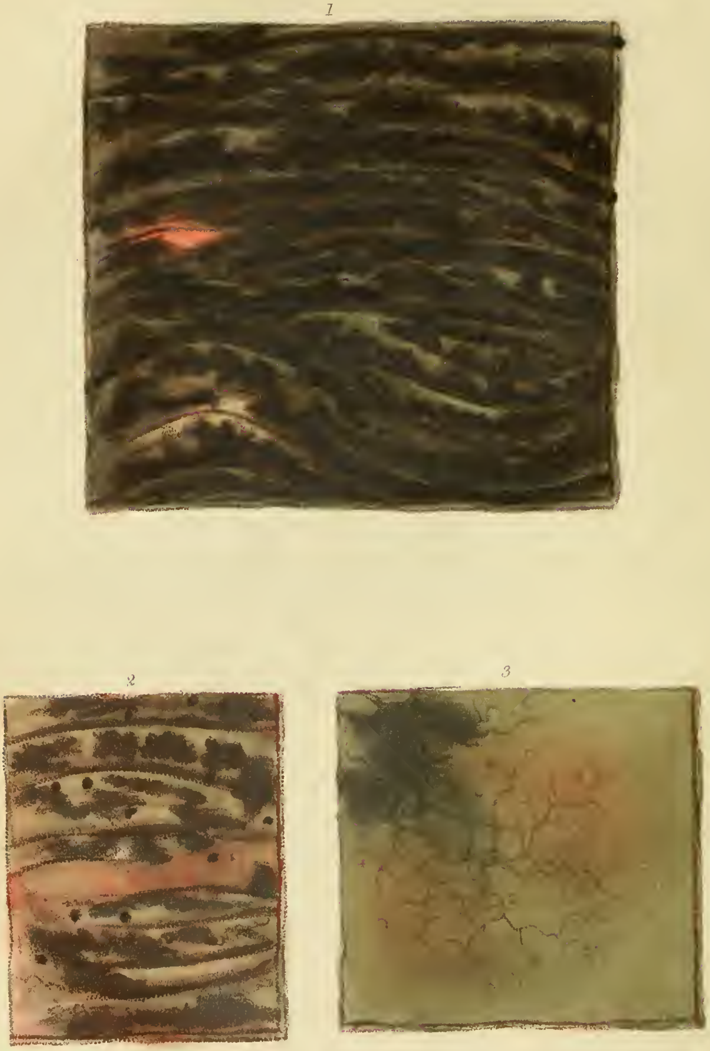

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Mucous membrane in Cholera.

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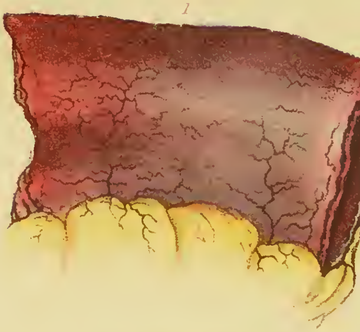

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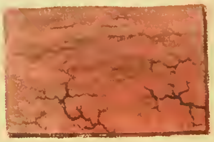

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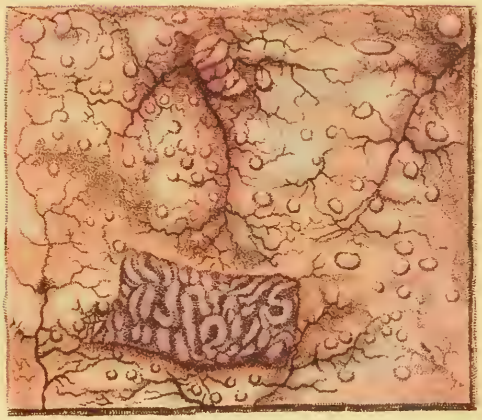

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THE

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MEDICAL SCIENCES.

Art. I. *Contributions to Cardiac Pathology.* By Thomas H. Wright, M. D. Physician to the Baltimore Alms-house Infirmary.

Case I. *Aortal aneurism.*—J. Coursey, a robust black man, about fifty years of age, became an inmate of the Baltimore Alms-house in the winter of 1829. On what account this man had been originally admitted could be no further ascertained than that he was the subject of old inguinal hernia, which together with other chronic infirmities had rendered him unable to labour for his support; he had also been long affected by some embarrassment in his breathing, with hoarseness and wheezing, of the kind popularly termed "the phthisic." In other respects he appeared tolerably well, was full in flesh, and sufficiently active to be engaged in light work about the institution, and had not at any time after admission, required the indulgence of stay in hospital.

In April, 1829, Coursey made application for something to rub on a knot, (as he called it,) on his breast, which he said was painful at times. Examination of the part betrayed the nature of the swelling referred to, which proved to be aneurismal development, representing a tumour about the size of an egg, situated near the inferior margin of the left clavicle. The tumour was oval in shape, elastic or compressible, and pulsating boldly wherever touched. The swelling was about equidistant from the sternal and humeral end of the clavicle, and rose so near the inferior edge of that bone, as to be taken at first for aneurism of the left subclavian artery, a conjecture which subsequent more careful inspection showed to be incorrect, and the true seat of the affection was determined to be the highest point of the aorta itself. The anterior part of the arch of this great vessel was conceived to have undergone a sacciform dilatation to such extent as to have pushed the pleural lining of the thorax and the intercostal muscles before it, until it emerged between the second and third ribs, so as to stand a defined enlargement or tumour, raised considerably above the plane of the thorax. The circulation was found to be free in the upper extremity of both sides, the pulse full and distinct in each arm, though perceptibly stronger in the right than in the left.

In circumstances like these, surgery was out of the question, and the other resources of art promised but little toward arresting the progress of local mischief. It was necessary however to employ all the probable means of delaying the lesion which could not be finally prevented. The man was withdrawn from labour of every kind, placed at rest, (for the most part in a recumbent posture,) and cautioned against all considerable voluntary exertion, or strong excitements of mind; and his diet was reduced in kind and amount as far as regard for due constitutional support would allow. General bleeding was directed to be employed, and repeated as often as could be well borne—the quantity abstracted never to be so great at one bleeding as to be very sensibly acknowledged by its disabling effects. Cold topically applied and frequently renewed for a considerable time every day, was also ordered as auxiliary to the general plan and object of treatment—the manner of application, by cloths or sponge, saturated with cold alum water.

The man's state continued very much the same for two months that he remained in hospital, at the end of which time he grew discontented with confinement and restricted diet, and obtained permission of the governors of the institution to leave the house. He had at this time only occasional pain in the tumour, never very severe, no fever, and did not feel as a sick man, but was troubled by frequent dry cough, and wheezy respiration, the consequences apparently of tracheal irritation and embarrassment by pressure. When he left the house, the swelling on the breast was not manifestly less, or larger, than when he was taken into hospital.

Coursey had been absent from the house, and his case almost forgotten, when at the end of nine months, he presented himself again, with the old symptoms of cough, dyspnœa, hoarseness, &c. all greatly aggravated. He was now too a good deal reduced in flesh and strength, and in all respects evidently fallen off in his general health. He breathed with much more manifest labour or effort than formerly; the sound of inspiration, the wheezing before mentioned, was now so audible as to betray very considerable straightening of the tracheal passages, and his articulation was at this time scarcely more than a whisper. The recumbent posture had become inconvenient, sometimes could not be borne, and much annoyance was experienced from collections of viscid phlegm, obstructing the upper portion of the wind-pipe.

Some curious and interesting changes were found to have taken place in the local characters of this man's case during his absence from the house. There was no longer any appearance of that definite tumour or enlargement on the surface of the thorax, formerly so distinct, and then exhibiting an almost regularly circumscribed swelling, as first described. The part where this prominent enlargement had been, was now level with the common surface of the thorax, and pulsation could not be perceived there at present, more than in other parts of the same region. In place of a particular swelling with definite limits, the whole superior portion of the left thorax was now unnaturally prominent. The upper third of the sternum was the most protruded part, standing forward or outward, very obviously more than any other portion of that bone, and was gently rounded, or convex in front, as if pressed forward by some force acting mainly against the inner central surface of the protruded part. The cartilages also of the left side, and the corresponding portions of all the upper ribs were bent or bowed outwards, so as to make the left thorax considerably higher than the right. Pulsation was now a strong, even visible shock, diffused or imparted alike over the whole of the prominent region.

Another peculiarity noticed on the reädmission of the patient was, the total extinction of the pulse at the left wrist. When the aneurism was first discovered, and at the time the man left the institution, nine months before, circulation was nearly of natural force in the arm of the affected side; now none could be distinguished. The arm was somehow nourished, but the pulsatory action was not palpable in any part of the limb. The first change, that in respect to the particular locality, form, and extent of the swelling, seemed to import that the aneurismal development at the top of the arch had ceased to progress in its original direction, and was no longer so special or definite as at first, but had become more diffused, extending perhaps laterally downwards and forward, rather than upward. The second alteration, that with regard to the loss of pulse in the left arm, implied that the passage by the left subclavian, formerly open, was now closed, either sealed up by obliteration of the canal of the artery at its aortal mouth or end, or else obstructed by coagulum, or lymph deposit, in that part of the aneurismal sac, completely preventing the entrance of blood into this vessel. By one or the other of these impediments to the transit of blood by the subclavian, the arm seemed to have been thrown into a state of dependence upon the cervical and humeral anastomotics; a communication sufficient as it appeared for nutrition, but not free enough for evident pulsation.

To ascertain the state of the circulation by the main channels of transmission, a particular examination was now directed to the manner in which the function of the large vessels respectively was performed. The innominatum, right carotid, and subclavian, gave free and regular pulsation in unison with the heart's stroke, the impulse by those vessels rather less forcible than in a healthy subject. The left subclavian, on the axillary end of the second rib, no perceptible movement; left carotid, pulsatory action indistinct; some impulse was felt, but so faint as to leave it doubtful whether derived from movement of fluid through the vessel, or the effect of a general shock or jar among the neighbouring parts by the heart's stroke, and not imparted directly by action of the artery itself. The abdomen of the patient was flat and soft, muscles attenuated, and parts altogether favourable for taxis. Aorta of this region pulsating feebly, action discriminated with difficulty, and readily suppressed; pulsation rather more sensible, though still very weak in external iliacs as they emerge on the thigh. The veins on the surface of the left thorax were all enlarged and tortuous. A superficial vein of the abdomen presented a singular appearance. It rose, large as the little finger, from the left groin, and ascended in a curvilinear manner, bending quick to right and left in its whole track, until it connected itself by a free and obvious junction with the long thoracic or external mammary vein, which takes its course toward the axilla along the lower margin of the great pectoral. The large serpentine vein, just described, lay in its whole course over the usual route of the epigastric artery and vein within, and was taken for the left superficial, (external,) epigastric, or more properly, hypogastric vein; it was much longer, and varied very much in its course from any of the superficial inguinal veins.

These changes which the progress of the case had induced were remarkable and interesting, and were calculated to provoke curiosity as to their cause and manner of accomplishment. They appeared to imply that direct conveyance by the left subclavian artery was intercepted, perhaps by one of the modes of obstruction above suggested, and also that the left carotid had ceased, either wholly or in great part, to carry blood to the head. The great channel downwards too, the descending aorta, was so imperfectly supplied with fluid, or its pulsatory power so much weakened, that the movement by it, or through it, was scarcely palpable. It seemed from all the circumstances, as if the left upper, and the lower extremities had accommodated themselves to a much less than natural quantum of blood, or else that some secondary channels of supply had become the substitute, or auxiliaries of the primary and proper routes. The latter supposition was rendered probable by the state of the superficial veins of the thorax and abdomen, the very great enlargement of which seemed to import, that extraordinary capacity of transmission on their part, was required to meet a correspondent change of state and office in the set of arteries with which they were in communication. The fine inosculations, (familiar to anatomists,) between the extremities of the epigastric and internal mammary arteries, were ostensibly indicated by the circumstances of the case, as here contributing efficiently, by a vicarious function of conveyance, to the nutrition of the lower parts of the body.

This man remained in hospital altogether subsequent to his recent admission, but was subjected to no other treatment than light regimen and palliatives of cough, which had become more frequent, and caused greater inconvenience than formerly. He kept for the most part on the bed, but was often unable to lie down fully, in consequence of paroxysms of difficult breathing, and teazing cough, by which he was occasionally much annoyed in the recumbent posture. When he could lie down entirely, the right side was the easiest posture; he could not bear to lie at all on the left side.

From the many examinations he had undergone, and remarks on his case in his hearing, the patient was aware of the fact that the pulse of his left arm had been lost; this appears to have excited his attention, and led him to the practice of frequently feeling the wrist of that side. Owing to this habit, he was himself the first to discover and to announce that pulsation had returned in the left arm. This discovery was made by him about the end of the third month from the date of his last admission into the house. The pulse had become perceptible at the wrist, but the stroke was very faint; it increased gradually in force, so that by the expiration of the fifth month in hospital, it was quite distinct and regular, though still small. It did not afterwards augment in any sensible degree, and never became more than half the strength or volume of the natural pulse, or of that of the other side.

Here was another change in the condition of the case fitted to exercise conjecture as to its occasion and means. Did the return of pulsation in the left arm imply that some cause of obstruction at the mouth of the subclavian had been removed, and the canal thus again opened; or had some of the indirect channels of supply been gradually enlarged and perfected until the quantum of blood and facility of transmission were sufficient to impart the pulsatory movement through the limb below. It was now also discovered that pressure on the left subclavian, where it crosses the rib, would stop the pulse at the wrist, and this fact led an intelligent surgeon who saw the case, to infer that the aortal end of the subclavian was open, and had perhaps never been shut, or not more than temporarily obstructed. Although the circumstances just noted appeared to favour the conclusion drawn from them, my own impression remained, that direct communication did not exist between the aorta and subclavian, and that blood being poured by the cervical anastomotics of the opposite sides into the canal of the subclavian above the axilla, pressure in that portion of its tract might extinguish the pulse below. All these conjectures however were for the present uncertain, and insufficient to demonstrate what had actually happened; the proof of such question must abide the issue of time and events. The pulsatory action of the left carotid had not returned, as in the case of the arm of the same side; it was always doubtful, after defect of action was first discovered there, whether the great artery of the neck on the left was at all engaged in the office of circulation.

On the 23d of December, 1831, the unfortunate subject of this terrible affection died suddenly in the night, without any previous symptom or acknowledgment of more than usual indisposition. He had even appeared, and expressed himself for some time before his death, less distressed by his disease than formerly.

Examination on the day after death.—By detaching the sternum with its cartilages from the ribs, and from its other connexions, so as to be able to raise up that bone from below, the pericardium presented itself immensely dilated, and completely filled with some kind of fluid. At the upper end of this bag a large tumour appeared, which was easily recognised as the aneurismal portion of the aorta, stuffed with coagulated blood or lymph, so as to give that part more of form and solidity than the rest of the pericardial bag and its contents. At its highest anterior part, this tumour adhered firmly to the sternal end of the first rib on the left side, from which attachment it was cautiously freed by the knife, and the whole sternum removed. The aneurismal tumour now showed plainly, occupying the whole arch of the aorta, which was greatly enlarged and filled in its upper part by a dense mass of lymph concretion, adhering closely to the inner surface of the sac, and giving much firmness to all the convex portion, or arch of the dilated aorta. There was no opening into this large tumour, or the bag which enveloped it, except where the latter had been unavoidably penetrated in cutting it loose from its adhesion to the inner surface of the first rib; neither was there any blood effused into the cavity of the thorax—none in the mediastinal or pulmo-pleural space. The left thoracic cavity contained much water, and the lung of that side was extremely thin, flaccid and collapsed, showing the effect of continued pressure by the aneurismal tumour; this lung had evidently been long out of use, and was greatly shrunk or atrophied, but not at all diseased, or degenerated in texture.

Before tracing the connexions of the aneurismal tumour within the thorax, and while it still remained in place, preserving all its relations during life, attention was turned to the state of the principal vessels issuing from the main trunk—the aorta. The left subclavian was the first vessel whose connexion with the sac was investigated. It was found larger than common in its course along the clavicle, and perfectly free in its canal, from the axilla toward the heart; a probe passed up within it without hindrance of any sort, as far as the point at which it should have communicated with the main trunk; here the probe stopped abruptly, and could not be passed further, or made to enter the aorta or cavity of the aneurismal sac. The check was sudden and total, showing the mouth of the subclavian to be completely closed or obliterated.

The left carotid was next examined, and through a small incision into it, just above where it is crossed by the clavicle, a probe was passed upwards, and moved freely as high as the head, encountering no impediment until stopped by the winding form of the carotid canal. Downward the probe followed the channel of the carotid to where its original communication with the aorta had been, but which now no longer existed, the probe stopping in a cul-de-sac on the antero-posterior side of the aorta, about six inches below the line of the clavicle. This unnatural extent of the tract of the carotid within the thorax, was caused by the elongated state of the dilated portion of the aorta. Thus the left carotid, as well as the subclavian of the same side had entirely lost communication with the great trunk into which they naturally opened.

While dissecting the neck for the better investigation of the arteries coming off from the aorta, the veins of that region attracted attention on account of their unusual size and fulness. The left external jugular or superficial cervical vein was uncommonly large, as were also the thyroids, and numerous other branches communicating with it. But none of this superficial set of veins contained much blood, they were flat and nearly empty. The state of the internal jugular of the same side was very different in this respect, it was large, round and full, even distended with black blood, in a semiconcrete condition. In tracing this vessel, it was found to lessen in size as it approached the clavicle, and just above that bone it contracted abruptly, so as to shut up its canal, and instead of communicating with the subclavian vein, was here converted into an impervious cord or ligament. The left axillary vein was open, full size; and the subclavian also, (the coats of the latter much thickened,) was pervious and free, as far as the point of natural junction, with the deep jugular; at which place, the canal of the subclavian was obliterated, and its continuation from this point, once forming the great trunk, the transverse, which connects the veins of the left with those of the right side, to form the cava descendens, was now a mere ligament.

The nervus vagus, (8th,) of the left side, which was exposed in tracing the carotid and deep jugular down the neck, was uncommonly large, being in its whole course to the pericardium nearly the size of a crow-quill, and was changed in colour from its natural white, to a strong reddish tinge; it was intimately blended with, and lost, in the altered structure of the upper part of the aneurismal sac, originally part of the pericardium.

From the absence of distinct pulsation by the abdominal aorta, during the life of the patient, it had been conjectured that this great trunk was very much contracted, or in some way obstructed at, or near the lower part of its aneurismal portion. Contrary to this surmise, both the thoracic and abdominal tract of the aorta was found perfectly free and full-sized; its thoracic portion even larger than natural, and communicating directly, by a large, open canal, with the free space of the aneurismal sac. On this side, the left, the aneurismal tumour had not formed any very close or firm adhesions to the parts on which it lay; none to the spine, or left side of the vertebræ; but on the right, the back part of the aneurismal cyst, was intimately attached to the bodies of the third and fourth dorsal vertebræ, and in destroying this adhesion, the sac was unavoidably opened at those points. The whole tumour was now removed by bringing down the trachea and œsophagus; dividing the arteries of the neck and arm, and cutting the aorta near to the diaphragm. The trachea and œsophagus were both involved with the posterior coats of the tumour; the œsophagus so intimately adherent near the branching of the trachea, as to be inseparable without opening into either the sac, or the tube, the partition between them was a mere film, scarcely more dense than the finest paper.* It has been before noticed, that no blood had been effused into the thorax; and also, that the pericardial sac was greatly enlarged. The increased extent and capaciousness of this bag, was owing partly to the aneurismal development, in which its upper portion was included; and partly to large serous dropsy of the bag itself, by which accumulation it was greatly distended, laterally and downwards. The dilated and diseased aorta had given way at its inferior portion near where it rises from the ventricle, and thus poured the whole of its contents into the dropsical pericardium, the lower half of which was loaded with a large mass of coagulated blood. Hence the cause of sudden death without external hæmorrhage; and the reason also why no blood was effused into the free space of the chest. The heart was very diminutive in size, and pale, or blanched, but not obviously diseased.

Remarks.—It was a curious, and as far as I know an unusual circumstance, which occurred early in this case; namely, that the primary aneurismal development which had advanced to such a degree, as to press between the second and third ribs, carrying muscles and integument before it, and presented itself as a well-defined pulsating tumour, above the level of the chest, should have ceased to advance in this direction, and retired completely within the thorax, leaving no external trace of its existence.

Another interesting event in the course of the disease, was the fact, that before the man left the house, as mentioned in the account of the case, and while the external tumour existed at the top of the chest, the pulse was free in the arm of the affected side, and on the contrary, at the time of his return, or second admission into hospital, when no special swelling could be any longer recognised, pulsation was wholly extinct in the left arm. The same defect of sensible pulsatory movement, was now also discovered in the left carotid, and in the great trunk of the belly; in the former of which no regular stroke or pulse could be distinguished, and in the latter, only an obscure and feeble action, scarcely to be defined as pulsation.

The conclusions drawn, during the life of the patient, from the changes just recited, were afterwards found to be partly right, and in part erroneous. It was proved by dissection, that the aortal mouth of the left subclavian and carotid were completely sealed up;* as had been conjectured; and that no blood passed directly from the heart into those vessels. But it was also found, contrary to expectation, that the descending aorta, instead of being contracted, closed, or obstructed, in some part of its thoracic or abdominal tract, was throughout fairly pervious, and even rather larger than natural. The supposed vicarious function which had been attributed to the internal mammaries and epigastrics, was also refuted by examination. The probability of an important change in the state and offices of this set of arteries had been based on the nature and seat of lesion in the great trunk; the obscureness amounting almost to total absence of pulsation in the abdominal aorta, and on the great enlargement, together with the obvious anastomoses of the superficial abdominal and thoracic veins. All these inferences however were overturned by the capacious and unobstructed state of the descending aorta, and equally contradicted by finding the internal mammaries and epigastrics in their normal state, in no degree enlarged, and not perceptibly more in communication than is natural and common.

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* This explains an event which occasionally happens in aortal aneurisms about the arch; viz. their liability to break into the œsophagus, and be discharged by vomiting; or to break into the œsophagus and trachea at the same time, in some unusual effort, or fit of violent cough.

Two questions present themselves for consideration in a physiological summary of the facts in this case. First, how was the left side of the head, neck, and left upper extremity supplied with blood. Secondly, in what manner was the venous circulation of the same parts accomplished. The first question occurs because the channels of supply by the left carotid and subclavian were stopped by permanent closure of the mouth of these vessels; while the second is founded on the fact that the left internal jugular was obliterated before it reached the subclavian vein, and the latter, the subclavian vein itself, from the point where the jugular should have communicated with it, was converted into a mere ligament; thus intercepting all communication by this route with the descending cava.

The supply of blood to the left side of the neck, head, and left arm, must have been effected through inosculating branches of the right and left carotids, and subclavians; the latter principally; namely, the inferior thyroids, cervicales, and transversæ colli and humeri, reïnforced in part perhaps through the descending or superior thyroids.

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* By slitting open and partly inverting the aneurismal sac, so as to expose the points at which the probe stopped in the bottom of the subclavian and carotid canals respectively, no trace remained of the former openings of those vessels into the main trunk. These were utterly effaced, by a membranous covering as smooth, thick, and firm, as the coats of the artery elsewhere, and in all respects like the rest of the inner wall of the dilated aorta.

The trunk of the superior thoracic of the left side was uncommonly large, and the branches of the humerarius, rising from it, numerous, and of greater size than usual. By this route chiefly, the blood of the left upper extremity appears to have entered the axillary artery, in quantity sufficient to nourish the limb; and ultimately, (by increasing freeness of inosculations,) to impart a distinct, though feeble pulse of circulation;* the subclavian artery also, was thus kept open toward the aorta, preventing the contraction which usually takes place in arteries from which the blood is entirely diverted.

The course of the return, or venous circulation of the left side, was, in some respects much more dubious and obscure, than that of its arterial supply. It is divisible into two routes, one of them departing greatly from the natural tract. The venous blood of the left side of the neck and head, may have found its way readily enough to the right side of the heart, by the free communication of the external jugulars with each other, and of the left external, with the left internal jugular; thus drawing off all the blood of that trunk, above the point of its sudden contraction and closure. This appears to have been the course taken, the external jugulars of both sides were manifestly larger than natural, particularly across the lower front of the neck, and were always turgid during the life of the patient.

But the return circulation of the left arm, was by no means so convenient or discernible, as the channels found for the venous blood of the left side of the neck and head. By the total obliteration of the left subclavian vein, from where the deep jugular joins it, all access to the heart would seem to be denied to the venous blood of the left arm. Even this difficulty however, appears not to have been too great for the admirable provisions of structure, and surprising vital endowments of the organic constitution. In looking for some route by which the venous blood of the left arm may have found its way to the right side of the heart, its natural course by the subclavian being shut up, I can perceive but one channel by which it could be brought into the current leading to its proper receptacle—the right auricle. It has been before mentioned, that a superficial vein of the belly, enlarged to the size of a finger, ascended in a tortuous manner, up the left side of the abdomen, until it communicated manifestly and freely with the external mammary, or long thoracic vein of the same side.

This then seems to have been the return route of all the venous blood of the left arm. After having been collected, by the axillary vein, it passed by the long thoracic down this great abdominal or superficial hypogastric vein, and was dropped into the femoral vein just below Poupart's ligament; from whence it mingled with the current of the iliacs, and found its way by the ascending cava, to the right auricle.

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* The communication across the neck being principally with the left axillary artery in front, explains why pressure about that point, stopped the pulse at the wrist.

If this be a true explanation of the manner in which the difficulties of the venous circulation of the left arm were surmounted, the case adds another curious example to the many already on record, of the wise and ample resources of the animal constitution, against great exigencies, arising out of accident and disease. During the life of the patient, it had been noted, that when lying nearly recumbent, the veins of the abdomen, (the great vein described, and two lesser veins running parallel with it, also enlarged,) were rather flaccid, but on rising up to the sitting posture, they all became dilated and tense. In the standing posture again, these veins were less full and prominent than in sitting, owing apparently to some degree of compression by the latter posture in the groin, or about the place of communication with the femoral vein. The presumption that the venous blood of the left arm returned to the heart by the circuitous route pointed out, is greatly strengthened by the fact, that the superficial abdominal veins were enlarged *on the left side only*, those of the right remaining small as usual.

The almost total absence of pulsation by the abdominal aorta in this case, might be very differently interpreted by the advocates of opposite theories respecting the natural powers of the circulation, or the forces by which the blood's movement is originated and maintained throughout its circuit. The aorta was free and unobstructed through its whole course in the thorax and belly, and also communicated by a direct opening, large as the calibre of the rest of the trunk, with the cavity of the aneurismal portion of the vessel, so as to receive readily the rush of blood as it was delivered at each contraction of the ventricle. Why then was so little pulsatory action perceived in the artery below? To those who imagine that the contractile power of the heart is the only force by which motion is imparted to the blood, it might seem that the defect of pulsation in the aorta furnished evidence in favour of their hypothesis. The momentum of the heart's action, it might be said, was too much expended upon the aneurismal portion of the artery; and the mass of solid matter, (concrete lymph,) it contained, to be distinctly or forcibly imparted by the fluid entering the tube leading out of the great sinus or sacculated part of the aorta. The vis a tergo, in other words, would thus be so broken or lessened, as to be only faintly perceived in the abdominal track of the main channel of supply to the trunk of the body and lower extremities.

It might be contended, on the other hand, by the advocates of the doctrine of inherent organic properties of action in the arteries themselves, by which they carry on the blood delivered to them by the heart, and to the exercise of which powers pulsatory action is mainly owing, that the facts in the case afford equal support to their construction of the natural phenomena of circulation. On the latter theory of the moving powers of the blood, the feebleness of pulsation in the aorta below the aneurismal portion, would be referred to the morbid state and changes in the vessel, and consequent impairment of its tonic and contractile energies; and hence the feeble display of propulsive or pulsatory action. The testimony is both ways, and would be interpreted according to the favourite doctrine, with which it was compared. One fact would appear to have some bearing on the point in question; there was no very evident deficiency of pulsatory action in the principal trunks leading from the aneurismal sinus to the right upper regions of the body; the vessels supplied through the innominatum the right carotid and subclavian. The pulsation of those vessels, though not positively strong, was perfectly distinct, and very near the common standard of force. It must be considered, however, that this set of vessels received the jet of blood from the heart in a more immediate manner, and at much less distance from the ventricle, than the mouth of the thoracic aorta placed by the enlarged state of the arch, low down in the chest, almost under the heart, and receiving only the deflected current of blood: the innominatum, on the contrary, looked directly toward the left ventricle, and was only somewhat more distant than common from that chamber, in consequence of elongation and distention of the root of the aorta.* With due allowance for this relative position of the upper and lower canals with reference to the central power, or momentum of the heart, my own opinion of the moving forces of the circulation would incline me to attribute the defect of pulsatory action in the aorta, mainly to impairment of propulsive contractility in the vessel itself, consequent on the diseased state of its coats at, and for some distance below its arch.

Carditis and pericarditis—lymphatic or membranaceous.—The high degree of sensibility attributed to the textures of the heart, and the immense importance of the function performed by that organ, seem calculated to render it peculiarly incapable of enduring irritation, or undergoing morbid changes, without betraying manifest and formidable signs of the disturbance it suffers, or the lesion to which it has been subjected.

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* The innominatum was also exempt from any manifest degeneracy of its own tunics; a condition very different from the highly morbid state of the aortic structure.

But whatever may have once been thought of the liability to instant and urgent danger from diseased actions accruing to the heart's substance, it is now very well known that morbid states of this part are by no means rare, and also that imminent or immediate danger is not the invariable attendant on cardiac affections. It is also sufficiently ascertained that diseased conditions of the heart may arise, continue long, and effect great changes in the texture, connexions, &c. of that organ, without any certain or violent display of suffering or danger. The affections of the heart and its appendages, denoted by the terms prefixed to these remarks, have often been found, (by after search,) to have constituted the occasion of many symptoms, which, during life, were either deemed of little importance, or too equivocal and obscure to allow of their being referred to so serious a cause as disease of the heart itself. Carditis and pericarditis, singly or together, have progressed in a silent and undistinguished manner, to the extent of almost total alteration of the natural condition and relations of these textures to each other, and to other parts, and there has been nothing to mark the change that was going on, or to reveal the special seat and nature of such disease or degeneration.

If any proof was wanted to show the fallacy of former opinion respecting the incapacity of the heart to bear direct irritation without obvious derangement of its common office, and great, or even fatal disturbance of its extensive and important physiological associations, such requirement is amply supplied by autopsic evidences. The strong vestiges frequently met with on the dissecting table, of ancient inflammation and its consequences, about the heart and its appendages, furnish unequivocal testimony on this head, and go to show plainly, that the heart, like many other fibrous structures, may endure the gradations of acute and chronic inflammation, not only with safety to life, but in a manner little obvious, and not easily discriminated. The records of surgery, of military surgery especially, supply full confirmation of the same fact, in the numerous instances reported, where the heart has been found to have suffered former violence, (to the extent of actual lesion,) of which the traces and the proof were still palpably betrayed. That the attributes of intrinsic sensitiveness, proper to this important organ, have also been greatly overrated, may in like manner be inferred, on the testimony of the facts and circumstances already noticed, which appear calculated to discountenance the presumption of any peculiar or exquisite organic sensibility in parts capable of undergoing irritation and its consequences to the extent pointed out, without those attendant symptoms—pain, disordered action, &c. which might clearly indicate the place, degree, or duration of morbid influence, suffering, and change. Even direct evidence to the same effect would seem to be furnished by some experiments, performed in a spirit at least sufficiently adventurous, and affording results highly curious, though of small apparent utility. While acupuncturation was in fashion for the cure of rheumatism, the needle, (we are told,) has been passed toward the heart, for supposed rheumatic neuralgia of that seat, until its succession of action and repose was plainly represented by the alternate rise and fall of the instrument, and yet no expression of particular pain or distress was extorted by this, (as it would seem,) actual penetration of the substance of the organ.

Case II. *Carditis and pericarditis.*—F. Antony, a female, aged about fifty, was admitted into the Baltimore Alms-house in October, 1831, affected as had been supposed, by pneumonic catarrh, now in a somewhat chronic stage. She had cough of some weeks duration; without pain of the breast, and only slight impediment of respiration. A considerable degree of mucous rattle was discoverable in her breathing; expectoration trifling, of common pituitous matter. There was no fever; pulse soft, rather small, indicating great debility. Personal appearance in this case was indicative of naturally robust constitution; the woman was above middle size, still muscular, and reported herself to have enjoyed general good health, without any former serious illness, and had for many years past, performed laborious services, chiefly as a cook; present indisposition altogether of three weeks duration.

The information obtained of the patient respecting the early circumstances or symptoms of her present illness, was partial and uncertain, fitted rather to obscure than explain the cause or condition of her sickness at this moment; she was either unable or unwilling to give any consistent or intelligible account of her recent state; appeared to think her illness slight, and was impatient of inquiries on the subject. The signs of danger were now manifest; evidences of serious impairment of vital power were revealed, both in the respiration and the pulse; the first was imperfectly performed, and attended by symptoms of pulmonary infiltration to an extent which must greatly embarrass the office of the lungs; the latter was deficient of tone, in a degree betraying unsafe diminution of that nervous influence by which the heart's action is sustained. Brain embarrassment was the interpretation to which the symptoms appeared to point. Diagnosis—congestion, vascular engorgement of the membranes, more especially about the tuber annulare and medulla oblongata; cerebral serosity in excess, and increasing. Prognosis—death in a few days, by effusion.

The patient prostrated more rapidly than was anticipated, and died on the night of the second day after admission. There was no convulsion, nor any violent tumult before death; neither did coma or insensibility supervene, the patient continuing conscious and intelligent as long as she lived. The difficulty of respiration augmented gradually after admission, unattended by cough, but with constant increase of the pulmonary ronchus before noted, showing progressive decay of that particular innervation on which the lungs mainly depend for their vital endowment.

Examination.—The contents of the thorax free from any signs of recent inflammation; lungs natural, neither reddened nor hardened in any appreciable degree; serous membranes pale, and looking natural; partial adhesions and thickening in places, showing traces of former phlogosis; some pleuro-pulmonary serosity, apparently old. In the head was found large excess of surface fluid, quantity greatest toward the base, (cerebro-spinal dropsy;) membranes of the brain very much tinged by patchy redness; colour highest over posterior lobes. The vascular plexus about the pons was highly engorged; arachnoid of cerebellum and medulla oblongata pink-red; aqueous accumulation large around the pons, crura cerebri and cerebelli. The ventricles exhibited only small serosity; substance of the brain apparently natural.

The heart of this subject was taken out for examination, in consequence of apparent uncommon density of its envelope. The pericardium proved on incision to be one-eighth of an inch in thickness, and so hardened in texture as to cut like wet leather. This unnatural thickness and solidity of the bag of the heart was uniform, or the same every where; and when it was laid open fully, its interior or cavity, presented a singular spectacle. The apex of the heart cohered firmly to the bottom of the sac, and every part of its body and sides was tied to the interior of the pericardium, by fibrous interlacements, of considerable length, but so close and strong as to present the appearance of a dense net-work, that could not be broken down by the fingers, by any common force. The cavity of the bag of the heart in fact, was a perfect web of fibrous or filamentous formations, about the size of large sewing cotton, crossing each other in every direction, and filling almost completely the naturally free space between the heart and its capsule. The body of the heart itself was unusually pale, almost white, and instead of its proper smoothness, its exterior was overspread and roughened by indentations very much resembling the pits of small-pox, apparently the remains of extensive punctated ulcerations.

Remarks.—All the appearances about the heart, noted in examination, were plainly effects of some ancient inflammation, which from the consequences, could hardly have been slight. It is manifest that both the heart's substance and its investing sac must have equally participated in the morbid actions which bound them together by such a multitude of preternatural ligaments. Yet from the patient's account of herself, her report of general good health, and almost total exemption from sickness until very recently, the laborious nature of her occupation, regularly followed until the commencement of her late illness, and from her personal condition, fleshy and well nourished, it would appear, first, that the time and circumstances of the morbid development in the textures affected, was not marked by corresponding signs of illness or danger; and secondly, that the great lesion of structure betrayed by these parts, had not afterwards materially interfered with the important function performed by the heart, and did not sensibly abridge the comfort, or impair the health of the individual, to whom had occurred a change replete in contemplation with so many probable and serious evils.

Case III. *Carditis and pericarditis—suppurative, chronic.*—Ferdinand Gibbs, a black man, about thirty years of age, admitted into the Baltimore Alms-house, December, 1831. This man was above middle size, person well-formed and muscular, exhibiting the appearance of a vigorous organic system, but little impaired by sickness or former disease. There was no emaciation, nor any manifest constitutional derangement or chronic malady. The symptoms on admission were those of ordinary febrile catarrh, or what is usually called a bad cold; patient had cough, hard, and somewhat frequent, attended by soreness in the breast, and slight hoarseness; no fixed pain in the chest, nor any palpable impediment to free respiration; cough not sensibly excited or exasperated by deep breathing. Fever was moderate; pulse about 90, full and soft, no discoverable irregularity; temperature nearly natural. Patient represented his cough to be more frequent and harassing when lying down than in sitting, standing or walking about; present indisposition reported to have existed about two weeks. Diagnosis—subacute inflammation of the sero-cellular tissues of the thorax; in other words, serous pneumony or catarrh.

Treatment.—Rest in bed, low diet, antimonials, and an epispastic in front of the chest. On the third day in hospital, patient was nearly free of fever; said he was well enough to be up, and solicited permission to leave his bed, as also indulgence in stronger diet. Permission was granted to be out of bed, but with orders to remain in hospital; diet regimen continued as before; medicine omitted. In the night of the following day, the fourth after admission, this man, without unusual complaint, or being known to have been more unwell than common, was discovered about midnight in a state of insensibility, and rapidly sinking. Respiration was short and sonorous; surface cold; pulse extinct; limbs relaxed. He died in a few minutes after being discovered in the state described.

Examination.—On opening the thorax the portion of the mediastinum immediately under the sternum presented appearances of recent inflammation in a moderate degree; cellular tissues tinged red, and slightly infiltrated with lymphy matter. The upper anterior surface of both lungs was also marked by superficial phlogosis; serous covering of the lungs redder than natural. The substance of the lungs was every where soft and pliant, without signs of condensation, or other evidence of altered state or texture.

The pericardium was excessively dilated, occupying all the middle space of the thorax, pressing the lungs aside, and forcing them high into the superior regions of the chest. This great bag contained a fluid, which proved on incision to be matter of a light yellow colour and uniform consistence, exhibiting the qualities belonging to what is called laudable pus. The quantity of matter contained in the pericardium was supposed to exceed one gallon; much of it was effused into the cavity of the thorax at the moment of incision, yet enough was collected to fill a common tin wash-basin. The interior of the pericardium, and the surface of the heart, were somewhat roughened by flocculent lymph, though not otherwise unnatural in appearance or condition; there was no excess or intensity of colour upon those surfaces indicating acute or recent phlegmasia. The heart itself was of the ordinary size.

Remarks.—This case strongly exemplifies the possibility of severe phlegmasial action on the surface of the heart, without serious embarrassment of its special office as the principal organ of circulation; the centre and salient point of the distributive system. There was here no palpable manifestation of impeded action of the heart, nor any appreciable defect of full and regular supply of the important material of excitement and nutrition to all the organic systems. The man neither acknowledged nor betrayed any feeling or sign, importing imperfection or incapacity of circulatory power. He was not affected with labour, hurry, or shortness of breathing; he had no pain in the region of the heart; no distress of countenance; no coldness of the surface, nor any infiltration of the lower extremities, or of the cellular tissue in other parts of the body; position of body was not known to produce any symptoms referrible to interruption or disadvantage of action by the heart, although cough was provoked or increased by lying down, yet there was no particular sense of oppression in this posture, nor greater inability to lie on one side than on the other. The pulse was free, moderately full, and not discoverably unequal or irregular; not sensibly altered by change of posture; no sudden failing of its force or evenness by muscular efforts; no tumult or flutter of movement under these circumstances, and no tendency to collapse or syncope; the man walked about the ward with apparent ease on the day preceding his sudden death.

The most remarkable phenomenon in this case, is the complete nutrition of the body, which had been maintained under chronic disease, so serious in kind and degree, affecting the main organ of supply, for all the material of growth, and repair of parts. It was manifest that the immense collection of pus in the bag of the heart was no late or sudden accumulation. Its formation was a work of time, and had commenced long before his late sickness, but when, or under what circumstances, could not be determined. The patient's account of himself, went no further back than the date of his recent illness by cold, about two weeks prior to admission, and there was nothing in his appearance or symptoms to induce inquiry concerning his state of health at a more remote period. He had the external, (personal,) marks, of a sound condition of all the important organs, and it is curious how this fact could have consisted with the state of things revealed by examination.

Case IV. *Aortitis.*—F. Scott, a man about thirty-five years of age, dark hair and eyes, short stature, person corpulent, was admitted into the Baltimore Alms-house, October, 1831. Symptoms on admission as follows:—Face slightly swelled or bloated; countenance pallid; look dejected, anxious, and expressive of suffering. Respiration was quicker than natural; breathing performed with some difficulty, and obvious voluntary effort, apparently imperfect, or insufficient to supply the demands of the pulmonary system; both the endeavour to obtain more air, and the defective supply of that want, were strongly represented in the manner of breathing. There was no cough, nor any positive soreness within the chest; wandering pains were occasionally experienced in various parts of the thorax, not constant in any region or seat; voluntary inspiration, not painful, but a good deal limited, or less complete than natural; oppression of breathing was sensibly increased on lying down; patient rested in the half-recumbent posture. By percussion, pectoral resonance very obscure over the left half of the chest; on the right side sound more distinct, but duller than natural.

The pulse was frequent and vibrating, rather small, easily compressed, and hurried into some irregularity by any slight exertion. Action of the heart diffused, felt over larger thoracic space than common, and imparting a visible jar or shock, to the upper part of the trunk. Temperature of the body warmer than natural; lower extremities enlarged, rather hard, œdematous in some degree, pitting slightly on pressure. *Diagnosis*—carditis and pericarditis, in the secondary or lymphatic stage; hypertrophy of the heart; water in the pericardial sac, and moderate hydrothorax.

Treatment.—Sedation was indicated; degree moderate, and if possible uniform. Directed rest in bed; bleeding, general and topical, regulated by circumstances; varying grade of excitement, predominant symptoms, state of pulse, and effects; amount and repetition of either general or topical bleeding, restricted to the purpose of lessening the struggles of the heart, liberating the breathing, and calming nervous and vascular tumult. Medicines—digitalis, calomel, squill, and henbane; doses and impression, according to general design. Diet wholly vegetable—milk in small quantity excepted.

Manifest abatement of the worst symptoms ensued to the plan of treatment carried on for ten or twelve days; and its salutary influence was alike confirmed by the better looks of the patient, as well as his distinct avowal of improved feelings and greater comfort; frequency of pulse was brought nearer the natural rate; the heart's concussive force abated; surface temperature reduced; and the functions of relief, by the skin, kidneys and bowels, sensibly promoted. Œdema of the lower extremities was also removed, and the tendency to infiltration for the present suspended. By these changes the patient lost great part of the expression of distress betrayed on his admission into hospital, and ceased to be so much an object of interest and concern as at first.

The patient's continued amendment led to permission to quit his bed in the day, with the limitation of confinement to hospital, (the weather being cold and damp,) and restricted diet. He was about the ward for many days, still improving in appearance and strength, when he became again a good deal indisposed by an attack of catarrh, or influenza, epidemical at the time. After slight chill, with headache and fever, he had short, oppressed breathing, dry cough, and constant soreness, amounting sometimes to smart pain, in the left breast, between the third and fourth ribs, not far from the sternum; skin was hot; pulse frequent, small, and variable; countenance bloodless, with a strong sallow tinge. On the second day of the patient's renewed illness, he was suddenly affected, after some hours of great embarrassment of breathing, with convulsive struggles, ending in unconsciousness of some duration, (resembling deep and protracted syncope,) and followed by extreme prostration. He recovered slowly from the state just described, and for some days appeared to be gradually escaping from the effects of the cold recently contracted. Fever abated, cough lessened, and pain of the left breast was nearly lost; the breathing continued more laborious than before the late attack, and was rendered quick and panting on making any unusual effort. On the eight day from the attack of influenza, this man, after having sat up for some hours, and walked occasionally a few steps from his bed, was again overcome suddenly with great faintness, followed immediately by powerful spasmodic motions, great difficulty of breathing, and with appearances, not noticed in the former attack, of strangling or suffocation. These threatening symptoms increased rapidly, until they terminated fatally, in about thirty minutes from the time of invasion. The pulse in both this last, and the former spasmodic attack, was small, feeble, and fluttering. In the convulsive paroxysm which ended fatally, the face, neck, and hands were livid; the first almost black, general surface preternaturally cool, approaching absolute coldness.

When the issue of this case was mentioned to me, (together with the manner, and a particular detail of the symptoms preceding death,) by the intelligent young gentleman who had treated the patient, Dr. W. M'Clennan, inquiry was made by him, to what the occurrence of convulsions, the signs of suffocation, and sudden death, were to be attributed; whether to sudden cerebral congestion, or to fatal cardiac or pulmonary embarrassment, by excessive serous accumulation in the pericardium or thorax. From the circumstances, it appeared to me that neither of those were the cause of the late symptoms and the event. The true difficulty seemed to exist in some condition of the heart itself, interfering with the proper exercise of its transmitting office, and involving a liability to sudden and serious interruption, or suspense of that function. The most probable affection of the organ indicated by the symptoms and the consequence, was some morbid state of the valves at the root of the aorta unfitting them for the due performance of their office; the particular change which the parts in question were supposed to have suffered, was thought to have been recently developed. Valvulitis, or inflammation of those delicate structures which serve as lock-gates at the mouth of the ventricle, it was believed, had deprived them of the attributes by which, in a healthy state, they contribute to the uniformity and effect of the circulation. To a virtual failure in the office of transmission, from the cause assigned, was referred the violent tumult, sudden overthrow, and speedy collapse, of the sensorial and vital functions.

Even on the supposition that the valves at the origin of the great vessels were nothing more than finely contrived pieces of animal mechanism, wholly passive themselves, and acted on merely by the forces of pressure and counter-pressure, the changes wrought in them by inflammation, by altering their bulk, and destroying their pliancy, would be sufficient to unfit them for the service to which they had been appointed. But from all the analogies of vitalized organism, it must be conceived, that the valves possess and exercise inherent powers of adaptation to their design, by which they are accommodated to the successive impulses of the issuing currents, and again, at the proper moments, erect themselves into due apposition, to sustain the impending column of fluid, until its pressure is taken off by the rapidly renewed exertion of the propulsive power—partly of the heart, and in part, perhaps in great part, of the tube which conveys it forward. In either view of the manner of subservience to the circulation by the valves,* the change of structure, size, &c. which inflammation is capable of producing, might unsuit them to the end designed, and it has long been placed beyond speculation or doubt, whether palpable alteration in the condition of those delicate membranes might become the occasion of sudden and fatal check to the distributive office of the central organ of transmission.

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* Our knowledge of the office of the valves of the great arterial trunks may be at most but partial and imperfect; resting too exclusively perhaps on mechanism and analogy. There appears some reason to doubt whether the valves at the root of the great arteries are placed there merely as barriers against a refluent tide of blood—or checks alone, on the gravitating force of the mass of fluid before them: in other words, whether they are only supporters of the weight of blood above them during the diastole of the ventricle. It appears probable that the valves in question are placed where we find them for other and active uses, and that they were in fact organs of adaptation, intended as much for the purpose of regulating the quantum and force of the currents moving by them, as defences or supports against any tendency or properties of the fluids beyond them, thus constituting an active part of the apparatus of circulation. I cannot well conceive that the valves are alternately pressed close against the sides of the vessel, and again dilated in the reverse direction by a reäctive or opposite force. They are most probably always in a state of some erectility, varying with the variable momentum and excitements of the moving fluids and the motive forces—which excitements of the latter they participate, and act in concert. Some of the reasons for this opinion are briefly as follows. If at every systole of the ventricle we suppose the semilunar valves to be laid fairly down upon the sides of the vessel, how is the office of nutrition to the heart itself effected—as the valves pressed close must cover and obstruct the

Examination.—Thorax. Cavity of the chest partly filled by free serosity; moderate hydrothorax. The pulmonary membranes, and lungs themselves, natural in appearance, without signs of recent in-

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mouths of the coronaries of the heart. On this point one of two things must be admitted—either that the valves do not fall back entirely under the impulsion by the ventricle, and thus shut up the coronaries while the jets of blood pass—or else, that the coronaries are supplied, not as the blood issues from the ventricle, but by a reflux movement of the blood in the aorta, taking place in the pauses of ventricular contraction. It would then be a backward movement of the blood, which, after pressing open the valves, fills the coronaries. This admission not only puts the contraction of the ventricle, and the filling of the coronaries, wholly out of correspondence in time, but contradicts likewise the idea so familiarly entertained, and often figuratively expressed by the remark, that the heart's charity begins at home—in other terms, that the vessels which nourish the heart's substance, receive the first issues of fresh blood.

There is some difficulty also in conceiving how, when the valves are laid open close upon the vessel by a column of blood acting as a dilating force, any quantity of fluid can insinuate itself behind them, sufficient to throw them fairly back, so that they may serve as complete lock-gates against a retrograde movement of the distending fluid. This difficulty would not be hard of solution if it were manifest, or could be demonstrated, that the impulsive force which threw the valves down upon the sides of the vessel was absolutely intermitted, and pressure of the fluid completely taken off, for a space long enough to permit momentary refluxes of the column of blood; thus showing in the blood's movement through the mouth of the great vessels, (the aorta, for example,) the variations of an active and passive state; in other words, the alternate effect of projectile force and gravitation. But are we justified by any known facts or analogies, in conceiving that there ever is, even for a moment, an absolute stasis, or a perfect remission of pressure, of the blood of the aorta? The *continuous stream* of arterial hæmorrhagy, from all considerable vessels, seems to decide this question in the negative, the more positively, inasmuch as in hæmorrhage the gush of blood is the more constant and equal, in proportion as it issues more nearly from the aortal fountain.

There appear to be physiological reasons, which need not be urged in this place, why the valves of the great arteries should possess properties of adaptation to the varying quantum and force of the fluids to which they give passage. The variable states of repletion and excitement of the heart and great vessels, in the different circumstances of health and disease, seem to require the exercise of adaptive powers by the valves to preserve the circulation from the disorder or imperfection to which it might otherwise be liable, under the very great diversity of state and influences to which it is subject.

flammation. Pericardium occupying more space than usual, somewhat developed by fluid contents, though not so replete as to appear distended. Division of the membrane showed pericardial dropsy to the amount of five or six ounces; fluid clear, or only tinged slightly yellow—not reddish, turbid, or flocculent. The colour of the heart was natural; its bulk and weight exceeding the common size, &c. of that organ, showing manifest hypertrophy or morbid increment; the walls of the heart were thicker and more solid than usual; chambers about the ordinary capaciousness. When the ventricles were laid open and washed out, it was very apparent that the lining of those chambers about the roots of both the great arteries was highly inflamed. The membrane at this part was deeply florid, and evidently thickened, so as to appear raised up, and somewhat ridged or plaited. The valves partook of the strong red colour just noticed, and were palpably thickened, appearing far more fleshy than natural. It was at the root of the aorta more especially, that the red hue of the lining membrane was found to predominate in the highest degree; the colour at this point was particularly deep, or what might properly be called excessive; the valves here were also more red, and more thickened, than at the root of the pulmonary artery. A like distinctness of the traces of inflammation, the same intensity of colour so prominent at the mouth of the aorta, overspread the internal tissue of that tube for some inches from its root, fading gradually toward the arch, and insensibly lost within the extent of the curve. The lining of the aorta was much thickened, and presented very distinctly successive plaits or folds, arranged in the transverse axis of the vessel.

CASE V. *Carditis—valvular inflammation—calcareous deposition.*—J. Ronalds, a black man, barber by occupation, forty-eight years of age, long resident in the Alms-house, was received into the African Infirmary of that Institution, July 8th, 1832, on account of a catarrhal affection, with considerable fever. This man was small-sized, lean, phthisical conformation, and subject to attacks of rheumatism, not violent, nor often preventing attention to his customary employments; shaving the inmates of the establishment, and performing light work of various kinds.

The symptoms of this case on admission into hospital, represented the muco-catarrhal form of fever, complicated by gastric irritation, of moderate intensity. Complaint was made of some pain, and considerable sensibility to pressure in the region of the stomach. Slight soreness over the middle of the breast, along the sternal line especially, and some cough; thin mucous expectoration. There was no fixed or sharp pain in any part of the thorax; and little more confinement in breathing than common; the patient's respiration, by his own report, being habitually impeded, or less free and perfect than is natural in good health. The skin was warm, as in moderate fever; pulse small, frequent, and vibratory, occasionally intermitting; tongue white, and moist; bowels rather loose. The functions of mind were natural and regular, patient's intelligence unimpaired, look and manner calm and rational. From all that appeared the case presented under first examination, little evidence of suffering and no manifest signs of urgent danger. It was regarded, namely, as fever of irritation from cold, with some degree of inflammatory development in the gastric and pulmonary mucous tissues—a character of disorder common in the Alms-house and elsewhere at the moment.

There were some peculiarities in this patient's state, which early attracted particular notice, and excited conjecture on their cause and interpretation. It was manifest, even to superficial observation, that the action of the heart was wholly disproportioned to the condition of the pulse; the excitement of that organ was too great, more properly excessive, when compared with the small volume and feeble stroke of the artery at the wrist. This over-action of the heart, was sufficient to impart a very perceptible motion to the trunk of the body; a visible shock or jar, which answered to the impulse of the heart, and demonstrated both the force and frequency of its stroke. The heart's percussion was also felt distinctly over a much wider region of the thorax, than its beat can be discriminated in the natural contractions of that organ.

A remarkable consequence of this disordered movement of the heart was displayed in an interesting manner, by its effect upon some of the veins of the neck. The blood in the superficial veins of the right side of the neck, the external jugular and humeral veins especially, exhibited a constant oscillatory movement, resembling pulsation rapidly renewed. Some degree of pulsation could be distinguished by the touch in this set of veins, (which were greatly enlarged just above the clavicle,) but it was feeble, quick, and tremulous; and it was found by attentive comparison, that the oscillatory movement in the veins did not correspond to the pulse in the arm; the former being much less distinct, and more frequently renewed than the latter. The blood's motion in the veins at the root of the neck consisted in reality, of quick successive undulations rather than pulsations, properly so called.

The disproportioned action of the heart in this case, as compared with the tone of the general circulation, the range or extent, together with the seeming force of its percussion, implied either a particular temporaneous state of excitement, some special stimulation to extraordinary efforts, or else a preternatural condition, a permanent change in the size, capaciousness, &c. of that organ. Hypertrophy* of the heart was indicated by the signs; a condition of the organ, the more palpably betrayed, as was supposed by the tumult and disorder of the febrile state. The very obvious and singular undulatory motion in the blood of the lower cervical veins of the right side, appeared to be susceptible of explanation, on one of two suppositions; either that the action of the heart, at each renewal of its strong contractile efforts operated as a repercussive force, and imparted a species of refluxion to the blood of the right auricle, which being communicated to the blood of the cavas, was rendered perceptible in the nearest principal branches. This appeared one of the possible or probable causes of the constant undulatory movement in the veins at the root of the neck. Another explanation of the phenomenon in question, it was conceived, might be founded on the supposition of some imperfection in the office of the valve between the right auricle and ventricle. It was deemed most likely that there existed some morbid state of the tricuspid valve, which rendered the partition of the two right chambers incomplete, and permitted the contractions of the right ventricle to impart motion to the blood of the auricle; and that thus a series of reflected impulses might be manifested in the blood of the lower veins of the neck. Ossification, earthy degenerescence of the chordæ tendineæ of the tricuspid valve, was regarded as the cause of the imperfection presumed to exist in the office of that valve.

The case unexpectedly ran on a protracted course, assuming constantly, though gradually, a more unfavourable aspect; and with little variation of the symptoms above noticed, glided into a low grade of ataxic fever. Without any prominent local affection, or special embarrassment of particular functions, except the disordered action of the heart before described, and without the signs or acknowledgment of sensible pain or distress in any definite seat, the patient prostrated continually, until his debility became extreme, and his condition hopeless. The phenomena attending the progress of the case, were chiefly those of diffuse irritation of the mucous tissues, betraying in the character of the symptomatic fever, and the increasing coloration of the tongue, fauces and gums, the gradual spread of morbid sensibility to the submucous and deeper organic textures, and a correspondent aptitude in the vascular apparatus of these structures to congestive embarrassments; the inequalities or excess of capillary repletion, which ensues to undue exaltation of the sense of feeling or susceptibility, every where the attribute of vital endowment, and manifests both the signs and effects of that engorgement, alike, and often equally, in the asthenious state, as in the sthenic condition of the system and the organs.

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* Enlargement, with dilatation of the ventricles; aneurismatic state of the heart.

The over-action and struggling movement of the heart continued to be plainly distinguishable in every stage of the case; and the undulatory motion in the veins of the neck remained equally manifest; the intellect was also true and correct throughout, and was unusually free of dullness or disorder to the last. Death took place in a gradual quiet manner on the 26th of July.

Examination.—Thorax, lungs, and pulmonary membranes, natural appearance, except a heightened tinge of colour over the whole, from general injection of the fine capillaries; colour equally diffused. Some excess of serosity in the anterior cellular tissues of the chest; no manifest accumulation of free fluids in the sacs of the lungs, or cavity of the chest; no hydrothorax. Pericardium, moderate dilatation, reddish hue externally, colour deep red in patches, particularly where the sac covers the superior anterior portion of the left ventricle. Some fluid collection in the pericardial cavity; fluctuation obscure, as from defect of pliancy in the investing membrane by unnatural thickness and firmness of texture. Incision of the sac proved it to be much thickened, and revealed unexpectedly the strongest marks of recent and high inflammation, both of the inner coat of the sac, and of the heart itself. The surfaces of both were glued together in many places, by large masses of fibro-gelatin, of deep yellow hue and apparently recent formation, the membrane which forms the covering of the heart and the lining of the sac exhibited strong general excess of colour, deepened in places to the extent of red ecchymosis; the highest colouring at the base of the heart over the superior portion of both ventricles in the greatest degree over the left. Lymph was effused, more or less on every part of the heart and interior of the sac; amount of water in the cavity not sufficient to distend the bag in any considerable degree. Moderate enlargement of the heart, some extra development in both chambers, most apparent in the left; density of wall of those chambers unequal, greatest above, softer in the middle region, feeling thin and flaccid towards the point. The apex of the heart was less acuminated than natural, giving a rounded appearance to the organ, and diminishing its usual conoidal shape.

The right ventricle was laid open freely in order to examine the tricuspid valve, the cords of which it was expected would be found in a state of earthy conversion. Examination proved that idea to be in great part erroneous; a very partial change only of this kind was discovered on one of the tendons of the valve, not sufficient apparently to destroy its pliancy, or interfere with its office. The whole valvular apparatus however, exhibited very distinctly a condition equivalent in its effects to positive and permanent degeneracy of structure. Every portion of the valve was highly inflamed; the cords, fleshy pillars, and the reticular curtain stretching along their base, were all thicker than natural, and reddened in the extreme; the height of colour strongly contrasted with the naturally florid hue of the columns and lining of the ventricle. This excess of colour was circumscribed, and defined by a circuit around and near the base of the columns.

The auriculo-ventricular system of the left chambers was found on examination, very different from that of the right; the mitral valve was quite pale, as it usually appears in the natural condition of the parts.

The similunar valves of the pulmonary artery were free of any morbid signs, without marks of inflammation, and showing nothing of concretion or earthy change. The corresponding valves of the aorta were thicker, two of them especially, than in the healthy state, but not more highly coloured than natural; the corpus aurantii of one of the valves, (the right,) somewhat enlarged and earthy, all other parts of the valves soft, though denser than common. But although the valves here were not themselves much changed, or actually degenerated, a very uncommon amount of earthy matter was found deposited in the little pockets, (sigmoid sinuses,) at their roots. In two of those cavities, the masses of calcareous matter were large as full-sized garden peas; those concretions were imbedded in, and nearly enclosed by the fine membrane lining the cavities in which they lay, and effectually prevented the valves from being thrown down in contact with the wall of the aorta, the valves were pressed open and permanently dilated, by the concretions occupying the sinuses; they, these two valves, were also shortened and thickened.

The internal surface of the ventricles, and the lining of the pulmonary artery, and of the aorta, were natural in appearance, colour pale red, and uniform.

Case VI. *Carditis and aortitis—secondary.*—Elizabeth Crouse, forty-five years of age, long resident in the Alms-house, died in that Institution, August 9th, 1832, after a violent attack of gastro-encephalic fever, brought on suddenly eight days before, by eating extravagantly, (reported to great excess,) of meat and potatoes. The signs of irritative congestion in the stomach and brain textures, were strongly marked by extreme sensibility to touch in the one seat, and characteristic functional and physical disorder, (partial stupor, unsteady intellect, flushed face, and injected eyes,) in the other. Pulse was irregular, full and throbbing for some beats, then smaller, frequent, and jarring; heat of surface feverish; head painful; tongue, white surface, dotted with large red granules, rather dry; sub-surface, lingual substance, redder and darker red than natural. Patient had vomited part of the food taken, but no present irritability of stomach or bowels.

The treatment consisted in general bleeding, repeated, (blood sizy;) cupping renewed in various seats—temples, epigastrium, sub-occipital spaces and cervical spine; semicupium; laxative enemata; ablution frequently of abdomen with cool spirit lotion. Regimen, bread water drink and diet. Very little medicine was ordered, at first oil emulsion to moderate catharsis, aided by enemata, afterwards sedative draughts, (alkaline,) and diaphoretic aperients—small antimonials, pulv. jacobi, and tart. solubile. Partial amendment appeared on the second and third days; patient's looks improved; intelligence more correct; tongue moist, and better colour; abdomen less tender; pulse and heat nearly natural; patient had now some cough and bronchial excretion, as in slight mucous catarrh.

The symptoms of mucous pneumony went on to increase, not however to a severe extent, and fever revived gradually with its primitive characters of great irregularity in the pulse, and now with much more of irritative, and less of power than formerly; signs of accumulative morbid sensibility; new fluxionary movements in the stomach textures were also renewed, by extreme tenderness again to the touch, and deep red hue of the fauces and tongue. These indications of concentrative gastral phlogosis augmented constantly, though combated by the best means which occurred to us, cupping again the epigastrium, and subsequent blistering; and the patient sunk with a rapidity, not common even in the severer forms of congesto-irritative fever. The cerebral organism betrayed less embarrassment in the latter than in the earlier stages of the case; the functions of mind were less dulled or disordered than at first; the spinal encephalon, (spinal portion,) however was involved very manifestly in the advanced period of the case, as appeared from constant twitching in the muscles of the neck and shoulders; tremor of the hands, laboured breathing, and more than all, instant shrinking from the touch in the back of the neck, with quick and constant renewed convulsions of the face when pressure was made about the occipital hole.

Examination eight hours after death.—As was expected, the organic textures of the stomach showed deep and general phlogosis; they were cherry-red throughout, the colour not patchy, or heightened in places, as is common in mucous gastritis of ordinary intenseness, but uniform, as though the coats were thoroughly dyed red; the fine arborescence of the coronaries, and spleno-gastric arteries, was marked in the depth of colour which pervaded the stomach textures. This state of the gastric tissues had been foreseen, and was easy to foresee, but consequences were discovered in the thorax which had not been anticipated. The lungs were natural in appearance, every where except the margin of the left lung, where it touched and cohered with the higher part of the pericardium; there it exhibited a deep red border, or fringe, an inch broad on the body of the lung, and of rather more extent along its margin. The pericardium was reddened very highly over its whole surface, in a particular degree where the inflamed margin of the lung was in cohesion with it. The sac when opened exhibited marks of inflammation within, equivalent to those on its outer surface; the covering of the heart also, the left side especially, was strongly marked by the hue of inflammation, and a thick coating of lymphy matter; the corresponding internal surface of the pericardium was coloured deeply, and covered with lymph excretion in the same manner as the side of the heart. The sac contained but little water.

The left ventricle was plugged with a large clot of fibrin, extending toward the mouth of the aorta; when this was pulled away, a mass of dense yellow gelatin, (fibro-gelatin,) remained adhering to the smooth portion of the ventricle leading to the aorta, and occupying the greater part of the aortic canal, some way above the valves. This body of lymph was very different in appearance from the clot of fibrin taken out of the ventricle, the latter was grayish white, as usual in the blood coagulum, (polypus of the ventricle,) found sometimes, often immediately after death; the matter in the mouth of the ventricle and root of the aorta was yellowish, with a tinge of red, not lying loose on the lining membrane, but adhering to it with considerable firmness of attachment. When this lymph excretion was removed, the membrane underneath was found thickened, deep red, and pulpy; the same appearance encircled the lumen of the artery, its lining was thickened, prominent, and intensely red. The depth of colour continued extreme, as high as the arch of the aorta, and was not greatly abated before passing the bend of the vessel downwards. The other chambers of the heart showed no marks of disease; the heart itself natural in size and form, and without obvious vestiges of ancient inflammation. On account of great heat of weather, the examination was not prosecuted within the encephalon, to discover the extent of cerebro-spinal arachnitis, represented by the signs throughout the case.

Inflammation of the heart, in a special degree, was not suspected in this case. The supposed, and no doubt the real exciting cause of sudden and severe disorder in the gastric and cephalic systems, the character and force of primary impression, and secondary involvements, was deemed sufficient to explain the nature, course, and violence, of all the symptoms; and there did not appear in the progress of the case, any evidence respecting the state of the heart itself, of a stronger or more significant kind, than is usually manifested by the participation of that organ in acute and exalted forms of irritation, when from local and concentrative, it becomes radiating and distributive, universal, or constitutional. There was palpable irregularity in the pulse, and more of the struggling action, throbbing, than is generally present in fever of mucous origin, (morbid sensibility, or phlogosis of mucous tissues,) but the character and range of disordered action in the pulse, is known to vary greatly under constitutional differences of irritability in the heart and arteries, as well as from peculiar states of aptitude or susceptibility, in parts of the vascular system, the effects of morbid association confirmed by habit, and readily provoked under casual or temporary excitements. The signs which might have given to the pulse a character more significant of heart affection, were either altogether absent, or not sufficiently displayed to attract notice. There was no greater shock or jar from the percussion by the heart, than is common in many forms of fever where carditis does not exist. There was no acknowledged pain in the region of the heart, and none of that characteristic anxiety depicted on the countenance, when this organ is acting under the constraint or suffering of inflammation in its own texture. The acts of breathing, until near the crisis of the case, were regular and uniform, unattended by any apparent, or avowed difficulty, and without the kind or degree of embarrassment common in carditis, and requiring the frequent or habitual change or elevation of posture, instinctively sought as a means of relief. The tendency to syncope on exertion, and occasional sense of suffocation, concomitant of unequal and insufficient propulsive action by the heart was not felt, or was partial, and escaped observation; the patient was restless, and required to be gently restrained at times from indulging a disposition to get out of bed.

At what epoch of the case inflammation of the heart and aorta were developed, is wholly conjectural. It most probably commenced in a degree promptly with the spread of organic irritation from the, (gastral,) seat of primary impression, and was one of the early displays of secondary textural sensibility in excess, or with congestive tendency. If such was the case, the disposition to phlogosis in that seat would appear to have been suspended for a time, during the mitigated stage of the case, and to have acquired new activity with the revival of general irritation, accompanying the invasion of pneumonic catarrh. Probably inflammation of the pulmonary mucous tissues, developed after some days, was the final cause, both of the profound carditis, and the secondary arachnoid, (spinal,) engorgements, which marked the terminal periods of the case. The revival of partially expended inflammation in a particular texture, or its manifestation in a new seat, (vaguely termed metastasis,) is not an uncommon event in the course of fevers of irritation, restored or exasperated by cold, undue stimulation of food, and other causes; sometimes indeed, by what appears a spontaneous movement, accumulative property, of constitutional irritation, uninfluenced by any appreciable extrinsic or contingent agency.

The brief comment indulged in the preface to recital of some of these cases, is borne out by the inferences from facts in the foregoing reports; first, that inflammation of the heart and its appendages may have existed, even to the extent of palpable and severe lesion of the organic textures, without manifest suffering, commotion, or danger, proportionate to the particular seat and severity of such an affection, and without permanent or serious after interference with the proper functions of the organ; secondly, that it is not alone in strictly chronic phlegmasia of the heart and appendages, that the seat or severity of affection is masked by absence or obscurity of characteristic signs, or inadequate representation of disturbance or danger. In the second case reported, "suppurative carditis," the phlegmasial character and actions could not have been low or slight, which inundated the cavity of the pericardium to the utmost repletion, with a purulent product; yet there appears to have been no evidence of this exalted irritation in the coverings of the heart, either by the location or intensity of pain, or peculiar imminence of danger from menaced overthrow of the functions of the organ; at least the patient's appearance did not import recent extremity of illness, nor was there an avowed recollection of having passed through any peculiar suffering, or pressing crisis. It was remarked also, in the account of the case, that the personal appearance of the patient, a few days only before his death, exhibited an uncommon instance of complete and unimpaired nutrition. After all due allowance for the inadequacy of our means of discriminating consequences of past morbid actions in the more important textures, and with every abatement for the imperfect employment, in the present instance, of the evidences we do possess, such cases are calculated to warn us against the expectation of a uniform correspondence between the seeming and the real state of the great organs; or of always finding, what however the physician should always seek, adequate evidence of the physical state and functional attributes of all the principal structures of the body, and the manner or degree to which they participate in any disarray of the functions of health.

Although the last cases recited, had their origin among the very common instances of fever, with gastric, pulmonary, or cephalic complication, and afford examples of carditis by secondary development or derived irritation, it is not to be inferred that special phlegmasia of that seat is apt to ensue as a frequent result of general febrile derangement from similar causes of introduction. I have met with more instances of a like character and kind, but in all such cases, and generally in all serious cases, the point, or points, of final concentrative irritation, is very much determined by the aptitudes to morbid association, created and left by former disorders of sensibility and action, or habitual derangements in structure and office, in the textures ultimately most concerned. A like remark, indeed, applies to all the cases reported, and to all similar instances of serious event from partial or equivocal representation of the signs and source of danger. The seats of final lesion, or the constitution at large, or both, it may be inferred, as a general rule, have been preöccupied by morbid actions more or less intense, which have run their course down to a point of structural or functional impairment, not incompatible with the continued, though less perfect performance of the general and special functions, yet not without a permanent incapacity to undergo a new, equal, and similar derangements of condition and excitement. Even a less violent invasion, or less severe train of disordered movements, are capable, under those circumstances, of causing irreparable lesion of structures, crippled by the impression of ancient injury, or of disturbing fatally the vital endowments of parts robbed of their original powers of accommodation or endurance. In these cases too, the general sympathies of association are more certainly called on, and more severely tried, and it will often happen, that the offices of participation or diversion, sink under the appeal, yield to the first new shock, and passively abandon the contest, with scarce a show of resistance, or a struggle for the victory.

These observations apply with particular truth to a very common result of the renewed inflammatory diathesis in the seats of ancient inflammation of important textures; and I would add, of the serous textures more especially. The lymphatized condition, (hardened, pseudo-membranes, or adherent states,) of those textures are peculiarly unfitted to encounter new developments, even of slight inflammation, and the offices of the organ are often far more seriously encumbered, than by a much more severe original assault; the sympathies of relation in other organs and functions are also much more readily aroused, and much less able to resist. Hence the very frequent occurrence of adverse issue, from special affections, at first deemed light and unimportant, perhaps equivocal in kind, and scarcely painful, and which, even after inspection, may prove to have been of small extent, and superficial impression. Such are among the remote contingencies of ancient inflammation, suspended more properly than cured; the liability of textures crippled and respited, rather than wholly relieved. The serous tissues, as before remarked, exhibit the most common examples of the result referred to, and among them the cardial and pericardial membranes, the pulmonary and costal coverings, (pleuræ,) the serous tunics of the brain, without and within; the peritoneum, with its wide expansion over bowels, liver, spleen, &c. afford the frequent seats of revived, or often renewed derangements, and each inviting the nearer approach to danger, or fraught with consequences less visible than before.

It is not intended by the recital of the foregoing cases, or the commentaries they have suggested, to imply or inculcate the idea, that cardiac phlegmasia, acute carditis, in particular, is not ever, or commonly represented by severe or serious symptoms, or adequate and significant signs of the seat and nature of that affection. There is no design to controvert the accuracy of definition, or appropriateness of symptomatology, as generally received in relation to cardiac affections, especially those of the acute or idiopathic class. These, for the most part, have been truly reported by many writers on this order of diseases. Few local affections indeed are, or can be more distinctly or strongly represented in their signs, than those which affect primitively or specially the central power of circulation; the diagnostic symptoms of acute phlegmasia, of that seat, should naturally be, as they generally are, in fact, plainly revealed in palpable suffering, and obvious disorder of function. The cases reported, show however, that the same force of display, or facility of discrimination, does not apply to morbid affection, or structural changes in the same seat, when these are insidiously formed, or slowly consummated, when they of secondary origin, or become consecutive results. Even affections essentially the same in kind, it would appear, are not represented by like degrees, or even modes of suffering, nor equal or similar interruption of the offices performed. The power of accommodation to morbid impressions, and even morbid changes of serious extent, would seem, in short, to belong to the textures of the heart, equally as to other structures, not alike endowed, in general opinion with the attributes of inherent sensibility, exalted vitalism, and importance of action. This is mainly what the recital of the facts given in the preceding histories was designed to illustrate; a contribution drawn from the records of disease, in behalf of our fund of physiological knowledge, rather than an offering of any real importance to the acquisitions or objects of pathological research. While diseases of the heart are often more seeming than real, they are also sometimes more real than apparent; the above report proves that it may be comparatively silent, when its condition is less safe, or its danger most urgent. The symptomatic affections of the organ, those which are developed on it by its relation to many sources of sympathetic excitement, are often most sensibly felt, most openly acknowledged, and plainly recognised; its own private or peculiar maladies, though far more serious, are sometimes less ostentatious, and not so readily distinguished.

Case VII. *Carditis, sub-acute—prolonged.*—T. Thompson, black man, was received into the Baltimore Alms-house, December 15th, 1831, on account of difficult breathing, attended with signs of dropsy. The man was middle-aged; person large; general marks of strong constitution; very little waste of flesh; debility moderate. Face of the patient was slightly swelled; abdomen rather tumid, with feeling of hardness; no palpable fluctuation. The legs were enlarged, thick around the ankles, every where very firm, yielding partially to pressure; pitting a little; hard œdema of lower extremities. The principal complaint made at present by the patient referred to his breathing; respiration was short and frequent, quickened very much on slight exertion; causing breathlessness, and failing of strength, sometimes approaching syncope. There was no pain in ordinary breathing, but when respiration was hurried by exercise, pain arose, and became fixed for a time in the upper part of the left breast, near the sternum; this pain subsided after being some time still. No cough existed generally; cough however would always follow any unusual exertion which hurried the breathing; it was then a short, broken cough, with very little sound, and no expectoration; voluntary inspiration, in a state of rest, did not cause pain, nor provoke cough. Patient could lie very well on his back—with some inconvenience on his right side—not at all, for more than a moment, on his left; in the latter position breathing became difficult, with a feeling of great anxiety and oppression. Percussion over the chest gave natural echo, (pectoral resonance,) throughout the right thorax; dulled in the inferior portion, from encroachment on the lower part of the cavity by the liver—supposed to be enlarged. Left thorax, echo natural near the clavicle, weak a little lower; middle and inferior third of the left side non-resonant, stroke blunt and fleshy. Pulse rapid, (rate 120,) sharp and wiry, beat quick and abrupt, bearing pressure, and striking the finger with a jar, which gave the sensation of double strokes, or of second weaker beats instantly following every pulsation. Heart's impulse obscure, not attended by any visible shake of the chest; sound of auriculo-ventricular action, (succussion,) deep-seated and faint, scarcely audible. Temperature of body was natural; tongue clean; eyes clear; countenance calm; appetite sufficient; bowels regular. Examination of abdominal regions indicated considerable enlargement of the liver, simple increase of volume apparently, without confirmed induresccnce, or seriously vitiated organism; belly tense—signs of ascites equivocal. Patient represented his illness to have commenced five weeks before, with chills, fever, shortness of breath, and great soreness in the top of his left breast; very little cough; complaints attributed to taking cold; manner of life laborious and exposed; moral habits irregular, sometimes intemperate. Diagnosis by the signs:—Carditis, sub-acute stage, still severe; pericardial dropsy, moderate; left lung extensively adherent; chronic pleuritis; liver enlarged; indolent phlegmasia—probably ancient.

Of all the structural lesions inferred from examination, carditis was supposed to constitute the cause of present symptoms, and the source of probable danger. The tumult of circulation, and prominent functional embarrassments, of respiration, &c. were attributed to high inflammatory irritation in the organic texture of the heart, to positive carditis, still severe, though now prolonged; an affection supposed to have been developed at the time indicated by the patient as the date of attack. The dropsical symptoms, anasarcous state of the limbs, &c. were supposed to be consequent on the same cause, viz. long-continued over-action of the heart, with the spread and establishment of the inflammatory diathesis in the capillary arterial tissues.

With a full explanation of these views of the case, it was placed for treatment in the hands of my highly intelligent and zealous young friend, Dr. W. M'Clennan. General advice—strict rest, simple and spare diet. Medical management—brisk catharsis, repeated as required, to remove serous infiltrations, and abate actions favouring their accumulation; the means jalap and crem. tart., minute antimonial addition if necessary. After purging, the steady pursuit of moderate but uniform medical sedation; for this general object, laxatives daily, saline aperients, doses small; design, two or three motions in twenty-four hours; diuretics and sedatives in combination—the selection, calomel, nitre, squill, and digitalis united. General bleeding only, if heat of skin, head-ache, furred tongue, &c. betrayed febrile exasperation;* topical depletion by cups over left thorax, and repeated if pain became fixed, or frequently renewed; blistering at a more advanced stage of treatment if then indicated. The treatment was recommended to be carried on steadily to the extent, and with the design of moderate ptyalism.

The effects of the plan pursued encouraged perseverance in its enforcement, and gradually accomplished its intention. The anasarca, and some abdominal fulness quickly disappeared under brisk catharsis, and the relief obtained in this respect afforded the patient sensible comfort. The pulse abated its hurried movement, at first in a degree barely discoverable; even under smart purging, laxatives continued, a softened skin, somewhat liberal diuresis, and one pretty free cupping, the rate of action scarcely varied from its range over 120, stroke still quick, sharp and jarring. The constancy of these characters of pulse was remarkable in every period of the case, and more than any other signs served to denote and discriminate their cause. There was however a steady, though slow amelioration even in the pulse; its frequency fell off in some degree, while the character of *irritation* in it, its intensity, lessened manifestly, and we had the satisfaction of finding it by the end of the third week of treatment constantly under 100, softer also, more full, and with very little harshness or jar in the beat. Mercurial impression was now revealed in a moderate degree, and the after-treatment was directed to its preservation, within mild limits, sufficiently long to effect total subsidence of special inflammatory excitement; to favour also resolution, if possible of much, or part, of old condensation of textures, pleuro-pneumonic and hepatic.

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* Incursion, perhaps more properly, as the hurried and sharp pulse in this case was not deemed evidence of fever, strictly.

After two months care of the patient, with a constancy and sound judgment highly creditable to the gentleman in charge of the case, the success of treatment was complete, to the fullest extent we had regarded as possible. The tendency to dropsy was no longer apparent; no embarrassment of breathing was discoverable, or felt by the patient. He could exercise temperately without inconvenience of respiration, or inclination to cough, and could lie with ease on either side. Percussion over the chest produced natural echo every where, except the lower half of the left thorax; a considerable extent of the coverings of the lung on that side was lymphatized, permanently thickened and adherent. The pulse had settled at a standard seldom varying from 80 in the minute, soft, and equal in stroke. The natural impulse of the heart was restored, and its sounds in action, or the sounds of its contents depending on its actions, were audible in their customary order and force.

The patient was discharged from treatment—reported for light work. He remained about the establishment until the last of May, 1832, and then left the institution, apparently in good health.

Hypertrophy.—The following instance of hypertrophy of the heart is briefly communicated because it supplies a rare example of uniform and excessive overgrowth of that organ—a specimen of pure supernutrition of the heart.

J. Clemmons, mulatto, aged about fifty, large size, person corpulent, was admitted in the Baltimore Alms-house, June, 1831. Disease general anasarca, moderate ascites, and signs of hydrothorax. This man was represented to have been much oppressed in respiration when received into the house, and died on the night of the same day. On examination, his heart was discovered to be greatly enlarged, and occupied his thorax so fully, that it was supposed to have caused death by suffocation. From these circumstances, my attention was called to the subject by the gentleman engaged in the examination. The heart, when taken out, had all the appearances of healthy structure; firm every where, uniform in its condition, moderately fat, and without marks of old or new inflammation, and no characters of general or special degenerescence of texture. It was injected for preservation, and its dimensions are given below, from measurements recently made in its dry state, twelve months after injection. To appearance it has lost considerably in bulk by exsiccation. The dimensions of this heart are contrasted with those of an adult heart, (from a large subject,) also injected and dried.

	Hypertrophied Heart.	*Natural Heart.*
Circumference at the base	17½ inches.	10½ inches.
Circumference midway the body	14½	9½
Circumference an inch above the apex	12¼	7¼
Length of the body from the top of the right auricle to the apex	13	6¾
Length of the body from the root of the pulmonary artery to the apex	8¾	4¾
Circumference of aorta around the root	7½	3
Circumference of aorta at the arch	6¼	2¾
Weight of heart	5 lbs. 3 oz.	14½ oz.

Baltimore, January, 1833.

ART. II. *Observations on the Apocynum cannabinum.* By JOHN H. GRISCOM, M. D. of New York.

THE properties of the Apocynum cannabinum or Indian hemp, especially in a medical and chemical point of view, have been hitherto but little, if at all investigated, for I have met with no dissertation on the subject, and with but few medical men who have any acquaintance with it. This is the more striking when we consider that it is an indigenous plant, of great frequency in almost every section of our country, and possessed of properties which can scarcely fail to entitle it to a respectable rank in the materia medica, when they become properly known and duly appreciated.

Botanical History.—The term Apocynum is derived from the Greek Αποκυνον, (Diosc.) ἀπὸ and κυνὸς, because it was supposed to kill dogs. The Egyptians call this plant *ossar*, whence comes the name of the fruit bidessar, q. d. *Bordes ossar*, which in Arabic, signifies the egg ossar, the pods of the great Assyrian sort, being shaped like an egg.*

Of the Genus *Apocynum*, there are reckoned by botanists seventeen species,† of which the *cannabinum* is the second in order. It belongs to the *Fifth* class, Pentandria, order *second*, Dygynia of Linnæus, and to the Natural order *Contortæ Apocynæ* of Jussieu.

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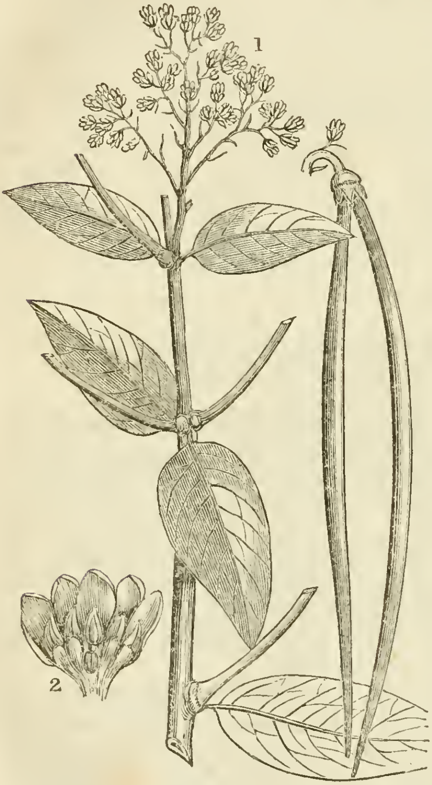
* Miller's Gardener's Dictionary.

† We have only *three* species of Apocynum, according to Nuttall and Eaton.

Synonyms.—Indian hemp—Dog's bane. It is most commonly known in this country by the name of Indian hemp.



Gen. Char.—*Calyx. Perianth* one-leafed; five parted, acute, short, permanent.—*Corolla.* Monopetalous, bell-shaped, semiquinquifid, divisions revolute. *Nectary*, of five glandular, oval corpuscules, surrounding the germ.—*Stamina. Filaments* very short. *Anthers* oblong, erect, acute, bifid at the base, converging.—*Pistils. Germs* two, ovate. *Styles* short. *Stigma*, roundish, bifid at the tip, muricate, glued to the anthers.—*Perianth. Follicles* two, long, acuminate, one-valved, one-celled.—*Seeds*. Numerous, very small, crowned with a long down. *Receptacle*, subulate, very long, rough, free.

Sp. Char.—*Corolla.* Bell-shaped. *Nectaries*, five, alternate with the stamens. *Stem* straightish, herbaceous, leaves oblong, cymes lateral, longer than the leaf.

The foregoing characters, taken from Miller, do not appear to coïncide entirely with those given by other botanists. There seems to have been some doubt among them as to which plant the name *cannabinum* should strictly be attached, and by the quotations from the authorities made below, it is sufficiently proved that there are several *varieties* of this *species*, and the *A. pubescens** described by R. Brown, appears to be one of these varieties; its character is therefore subjoined to the others. There is not however, any probability that there is much, (if any,) difference in their medicinal virtues, therefore as no description yet given will apply to all the *varieties*, and as any plant which will agree with any of these descriptions, may be safely taken for *Apocynum cannabinum*, practitioners in different parts of the United States, or elsewhere, who may wish to use this medicine, may be saved from inconvenience and expense.

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* Professor Eaton says, "Brown seems to have forced in an additional species, not found in nature."

Apocynum.—*Calyx* very small, 5-cleft. Corolla campanulate; border with 5 short, spreading, or revolute lobes. *Anthers* sagittate, connivent, cohering to the stigma by the middle. *Glandular teeth* 5, acute, alternating with the stamens, and opposite the segments of the corolla. *Styles* obsolete. *Stigma* dilated, and conical at the apex. *Follicles* 2, long, linear. *Seeds* comose.*

A. cannabinum. Leaves lanceolate, acute at each end, glabrous; cymes paniculate; calyx as long as the tube of the corolla. Observation. Stem herbaceous, 2 or 3 feet high. Cymes lateral, longer than the leaf. Flowers greenish-white.

A. pubescens. Leaves ovate-oblong, mucronate, obtuse at the base—on both sides, and with the shorter cyme, pubescent; calyx nearly as long as the corolla. Observation. Stem herbaceous, 2 or 3 feet high. Leaves almost tomentose on the under surface. Cymes terminal. Flowers greenish.—*Elliott's Sketches.*

A. cannabinum. Leaves oblong-oval, with hoary pubescence underneath; panicle pubescent; the limb of the corolla erect. Observation. Leaves and flowers greenish-white, or yellowish-green.—*Barton's Compendium Floræ Philadelphicæ.*

A. cannabinum. Leaves oblong-oval, acute at each end; cymes paniculate; limb of the corolla erect. Observation. There is some variety in the leaves of my specimens; some being oblong-oval, and others lanceolate and tapering at base; or possibly I may have blended the two species *A. cannabinum,* and *A. pubescens.*—But if they are really distinct, they closely resemble each other in habit.—The *pubescence* is but slight in any of those which I possess.—*Darlington's Florula Cestrica.*

A. cannabinum. Stem upright, herbaceous. Leaves oblong, tomentose beneath; cymes lateral, longer than the leaves.—*Loudon's Encyclopedia of Plants.*

A. cannabinum. Leaves lanceolate, acute at each end, smooth on both sides; cymes paniculate; calyx as long as the tube of the corolla. Observation. *Stem* erect, slender, branched, purple, a little glaucous. *Leaves* 2 or 3 inches long, and three-fourths of an inch broad, on short petioles, attenuate at the base, very smooth. *Cymes* many flowered, paniculate, smooth, segments of the *calyx,* subulate, about as long as the tube of the corolla. *Corolla* small, campanulate, green; border erect. *Follicles* long, very slender.

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* The generic character here copied, is taken from Torrey's Flora, "which being one of the *latest* publications, is more likely to be correct. The discoveries of new species, and the establishment of new genera, nearly allied to *Apocynum,* may from time to time, cause slight alterations in its character, according as new species are added, or old species are separated into other genera."—(*Letter from his highly esteemed friend, D. Thomas, to the author.*)

A. pubescens. Stem erect; leaves ovate, hoary pubescent beneath; cymes pubescent; corolla longer than the calyx; border erect. OBSERVATION. Stem 2 to 3 feet high, with a few erect branches. *Leaves* on short villous petioles, obtuse, but not cordate at the base, mucronate, more or less pubescent beneath. *Cymes* short. *Flowers* few, (small.) Segments of the *calyx* lanceolate. *Corolla* greenish-white.—*Torrey's Flora.*

A. cannabinum. Stem erect and branching; leaves oblong-oval, hoary beneath, and downy when young, (more or less glabrous in maturity;) cymes lateral and terminal; pubescent when young, (more or less glabrous in maturity;) tube of the corolla about equal to the calyx, with an erect limb.—*Eaton's Manual.*

Apocynum cannabinum is easily distinguished from *A. androsemifolium* by the much larger flower of the latter; and from *A. hypericifolium* by the somewhat procumbent stem of the last, and by its having "very much the aspect of hypericum."—Vide *Barton's Compend. Flor. Philadel.*

Description.—The roots of this plant are perennial, and creeping, the stems are brown, and about two feet high, the leaves smooth, in pairs; it abounds in a milky juice. Towards the upper part of the stem the flowers come out from the wings of the leaves in small bunches; they are of an herbaceous white colour, and being small, make no great appearance. This therefore is seldom admitted into gardens except for the sake of variety.* It flowers from July to September, and is a native of Virginia and Canada. It is propagated by parting the roots in March, before they put out new stems. It is hardy enough to thrive in the open ground, but the soil should be light and dry, otherwise the roots are apt to rot in winter. This sort spreads so much by its creeping roots as to be troublesome in gardens. The stems decay to the root in autumn, seldom ripening their seeds.† The bark of the stem when dry is very fibrous, and may be peeled off in strings, which are very tough and strong. The Indians of North America prepare the stalks of this species as we do hemp, and make twine, bags, fishing nets, and lines, and linen for their own wear.‡ It was cultivated by the Dutchess of Beaufort in 1699. One species of this plant, the *A. juventas*, renovating dog's bane, is esteemed by the Chinese for possessing similar properties to those of the ginseng.§

The root of the species under consideration, which is the only part of the plant employed in medicine, belongs to the class Radix repens, and is frequently very tortuous. It consists of two distinct portions, the main body of the root covered with a bark. The ligneous portion is of a yellowish-white colour, possessing considerable bitter taste, and some odour. The cortical part is of a brown colour, and rough externally, white, and smooth within. Its taste is extremely bitter, rather nauseous, and somewhat similar to that of the *Sanguinaria canadensis.* Odour strong, and unpleasant.

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* The *androsemifolium,* whose flower is larger, and of a purple colour, is more cultivated for appearance.

† Miller's Gard. Dict. London, 1798. ‡ Vide Kalm. § Rees' Cyclop.

Chemical properties.—Organic chemistry has hitherto been but partially pursued as a distinct science; its votaries have been comparatively few, and the facts which have been made known are still very much isolated and scattered. But the multiplied discoveries which have been made, and the numerous, interesting, and important circumstances relative to this class of bodies which have been given to the world, induce us to believe that this branch of analytical investigation will ere long advance to the rank of a distinct science, and claim a large share of attention. In the mean time, he who, by experiment and research, shall add one fact to the accumulated series, will furnish an additional stone for the erection of this new edifice, and lighten the task of him who shall undertake its construction.

The chemical investigation of this root has been pretty fully entered into, in order to ascertain its proximate principles. With this view numerous experiments were instituted, more than it would be adviseable to embody here. In some instances the results obtained by the use of reägents, were somewhat doubtful as to their nature; in such case I have drawn the most correct conclusions I was able, considering the limited state of our knowledge in this department of chemistry.

Experiment 1*st.*—Two hundred grains of the dried root were boiled one hour in eight ounces of water till reduced to six and a half ounces. The decoction was of a bright brownish-red colour, having a strong and somewhat nauseous odour, and a very bitter taste, resembling very much those of the dry root. The addition of a few drops of a solution of sul. ferri. to a portion of it, changed its colour to a dark green. The primitive colour was restored by sulph. acid. A portion of the decoction was treated with the acet. plumb. in solution, which caused the immediate precipitation of a light brown, flocculent matter, in considerable quantity, leaving the supernatant liquor perfectly clear and transparent.

Experiment 2*d.*—One drachm of the fresh dried root was subjected to the action of three ounces of alcohol, also one drachm to three ounces of water. The tincture was of a very light brown colour, and possessed very little bitterness. The infusion was much darker and much more bitter.

Experiment 3*d.*—The addition of water to the tincture rendered it of a turbid, opaque whiteness, destroying its original colour. Sol. sulph. ferri., caused a light green colour. When added to the infusion it became of a turbid green colour.

Experiment 4th.—Forty grains of the ligneous part of the root were macerated in two ounces of water for forty-two hours; the infusion was slightly tinged with yellow, apparently containing a good deal of mucilage. An equal quantity of the cortical part of the root was treated with the same quantity of water for the same length of time. This was of a bright brownish-red colour, similar to Madeira wine. On the *first*, sulph. ferri. had but a partial effect, causing a very slight tinge of green. Acet. plumb. had only a slight effect; it threw a little precipitate. On the *second*, sulph. ferri. had a decided effect, causing a dark green precipitate as in the former experiments. Acet. plumb. precipitated the same dark brown substance before noticed, in considerable quantity, leaving the liquor clear and transparent. From the latter, a white caseous precipitate was separated by the aqueous solution of gallic acid. A solution of carb. pot. had no effect on either infusions. The precipitate of the second from the sulph. iron. being filtered off, the remaining liquor was changed to a beautiful violet colour by the gallic acid.

Experiment 5th.—Eighty grains of the dried root were macerated in two ounces of water forty-eight hours, and the infusion evaporated to dryness. The residue was of a fine brown colour, and of a tenacious consistence.

Experiment 6th.—Two-hundred grains of the dried root were put into ℥xij. of distilled water; immediately after the immersion, the transparency of the fluid was lost, and it assumed a dull cloudy appearance, probably owing to the abundance of mucilage contained in the plant. At the end of twenty-four hours the liquor was of a clear amber colour, transparent. Neither the tinc. gallæ, tinct. iodine, oxal. ammon. or mur. barytes, had any effect on it. Eight ounces of the fluid were evaporated at steam heat. The residue was of a reddish-brown colour, thick in consistence, gummy. It could not be dried at this heat. Its taste was bitter, though differing somewhat from the solution before evaporation.

Experiment 7th.—The residual matter of the preceding experiment, was treated with distilled water; all the brown part was immediately dissolved, but a white scaly substance in considerable quantity remained undissolved. This was soluble in alcohol.

Experiment 8th.—The root remaining from the sixth experiment was then treated with alcohol. The addition of water to a portion of it caused a precipitate in the form of a white cloud. The rest of the tincture was evaporated, and a white substance was left which was insoluble in water.

Experiment 9th.—Twelve ounces of boiling water were poured upon two-hundred grains of the sliced root. The water immediately became cloudy, soon assumed a yellowish tint, and at the end of twenty-four hours was of a clear amber colour. At this time, at the bottom of the liquid, resting on the root, was observed a layer of a substance of a white woolly appearance, doubtless the mucilage of the plant, which was dissolved by the hot water, and precipitated when cold. Sulph. ferri. produced a slight green tinge, and acet. plumb. its before mentioned precipitate.

Experiment 10th.—When the aqueous infusion was treated with a solution of nit. of mercury, a dirty-white precipitate was formed, leaving the liquor above limpid, which in twenty-four hours, had assumed a purple colour. A solution of chlorine being added, this colour was destroyed, and a white precipitate thrown down. Lime water added to a part of this, caused a yellow colour, which immediately changed to black. When the precipitate was washed with water, before adding the lime water, no yellowness was produced.

Experiment 11*th.*—One hundred and fifty grains of the dried root were macerated in successive portions of alcohol, until all the matter soluble in this menstruum without heat was taken up. The remainder of the root was then dried, and was found to have lost from forty to fifty grains, equal to about twenty-nine per cent. The alcoholic solution was of a bright yellow colour, possessing much bitterness.

Experiment 12*th.*—This was distilled in a glass alembic until two-thirds had gone over. The remaining fluid was then of a rather deeper yellow, intensely bitter, and containing a yellow, powdery looking substance in small quantity. This concentrated tincture was then placed over steam in a glass vessel, and evaporated nearly to dryness. Soon after the evaporation had commenced, there began to form a thick viscid substance of a yellowish-brown colour, and a bitter taste, sufficiently acrid to blister the tongue in a few seconds. This substance appeared in considerable quantity. There was also observed a greasy looking substance, floating on the fluid, not so abundant as the preceding, but evidently differing from it.

Experiment 13*th.*—Five-hundred grains of the root were covered with alcohol and allowed to macerate; which operation was repeated four successive times. The last time very little colour or taste was perceptible in the tincture. The united tinctures were distilled until about two-thirds had passed over, (a small portion being retained, which was changed to a milky-whiteness when diluted with water, depositing in a few hours a white powdery precipitate.)

Experiment 14*th.*—The residuum in the alembic was placed over a steam bath, and about one-third evaporated, and then cooled. The edge of the fluid at the dish was covered with a *white, greasy looking substance,* very much resembling *tallow,* which extended in a thin coating up the sides of the glass. The bottom of the dish was also copiously dotted with a substance of apparently similar nature, but formed in distinct and separate globules, about the size of a large pin's head. They were entirely loose upon the glass, and a few of them uniting, *floated* on the liquor. The fluid was drawn off into another vessel, and this adipose substance left over the bath to dry, but as the globules soon began to assume a yellow colour from the heat, they were removed and allowed to dry spontaneously.

Experiment 15*th.*—The tincture was further evaporated, and when about one-half of it had disappeared, and the rest cooled, a considerable number of the brown, greasy looking globules, before mentioned, (Expt. 12th,) were observed, floating on, and dispersed through the fluid.

Experiment 16*th.*—The white substance, upon examination, presented the following characteristics. It had no odour, but possessed the peculiar nauseous, bitter taste of the plant in a very strong degree, and had an unctuous feel in the mouth, as well as between the fingers. It was insoluble in sulphuric acid, either dilute or concentrated, hot or cold, though blackened by it when concentrated. Acetic acid did not dissolve it. Potash water, nor aq. ammon. had any effect on it. Ether dissolved it readily; alcohol slowly, but completely. It was insoluble in water.

Experiment 17*th.*—The yellow or brownish, and greasy looking substance, which always appeared after the other in evaporating a tincture of the root, appeared to contain all the colouring matter capable of being extracted by the alcohol. This was so bitter, that when a piece not larger than a pin's head was held a short time in the mouth, it blistered the tongue severely, and the bitter taste remained several hours, affecting the tongue and fauces very disagreeably. It dissolves completely in alcohol, though slowly, and communicates to it a beautiful amber tint. It is insoluble in water, but after remaining in it a few hours, it loses its characteristic colour, and becomes of a dirty-white; it is also rendered very pulverulent, where, as before, it was very adhesive.

Experiment 18*th.*—Two ounces of the root were boiled in twenty ounces of distilled water one hour, then allowed to cool, decanted, and a fresh portion added, and boiled half an hour; this was decanted, and more water added. This operation was repeated until the water remained tasteless and colourless. The different decoctions being added together, were filtered; the colour was like that of Madeira wine. When tested with a solution of sulph. ferri. no change was produced until the fluid was concentrated, when it assumed a black colour, and threw down a slight precipitate. The tinct. of iodine produced a dark purple hue, showing the presence of *fecula.* A solution of nit. of silver caused a yellowish precipitate, showing the presence of *gum*, or *bitter principle.* Solution of acet. of lead produced a yellowish-white precipitate. The decoction affects litmus paper, showing the presence of an uncombined acid. A solution of gelatine proved the presence of *tannin.* The decoction was evaporated nearly to dryness, and treated with alcohol, which separated a portion of gum. This tincture was filtered, and evaporated nearly to dryness. The result was a dark reddish mass, which tasted at first sweet, but soon became intensely bitter, producing a swollen sensation of the lips and tongue.

Experiment 19*th.*—One ounce of the sliced root was boiled in ten ounces of alcohol fifteen minutes, and then macerated ten days. The alcohol when filtered, had the appearance of Madeira wine, and was very bitter. About one-third was evaporated, and on cooling, a substance like wax was deposited, which was removed, and two ounces of distilled water added, which separated a quantity of *resin.* This was removed, and the evaporation was continued until it had the consistence of thick syrup. The taste of this was at first sweetish, soon becoming very bitter, and occasioning a swollen sensation of the lips and tongue.

Experiment 20*th.*—The root after being treated with alcohol, was dried, boiled half an hour in twelve ounces of distilled water, and then allowed to macerate three days. The water was then decanted, a fresh portion added, and boiled three-quarters of an hour, when it presented a greasy appearance, which on cooling was found to be caused by wax. It was then filtered, evaporated to the consistence of a thick syrup, treated with alcohol, which separated a quantity of gum, again filtered and evaporated nearly to dryness. The result was the same as in Expt. 19th, but in a lesser degree.

Experiment 21*st.*—The root, after being treated with successive portions of alcohol and water, until the bitterness was dissolved, was macerated one week in six ounces of ether. It was then filtered and four ounces distilled off, when the remainder became turbid; this on cooling deposited a copious, yellowish-white precipitate, which had the appearance and feel of wax. This, when heated, melts, swells, takes fires, and burns with a white flame, leaving a very small portion of charcoal. The remainder of the ether was distilled, and left a very small quantity of resin, which was not bitter.

Experiment 22d.—Two ounces of the sliced root were macerated in repeated portions of distilled water until it came off colourless and insipid. The several portions were united, filtered and evaporated nearly to dryness; the extract being dark-coloured, very bitter, and viscid, weighing two hundred grains. This was macerated in successive portions of alcohol as long as it dissolved any of it. The residue was a spongy mass, insipid, possessing all the properties of gum. The alcohol was then boiled with eighty grains of calcined magnesia, filtered and evaporated to dryness. The result was a dark, reddish-brown mass, brittle, very bitter, nauseous and deliquescent. This may be considered as the pure *bitter principle,* coloured, as it is affected only by sub. acet. plumb. and nit. argent. which require twelve hours to show any change.

Observations.—The *first* experiment shows the action of two of the most active reägents which were employed.

By the *second* we have very clearly proved the superior power of water over alcohol in extracting the colouring and bitter materials of the root.

The object of the *fourth* experiment was to ascertain which part of the root contained the greatest quantity of active matter. The *cortical* part, it will be observed, contains by far the larger quantity.

It is shown by the *fifth* that much of its virtues is imparted even to cold water.

Experiments *third*, *seventh* and *eighth*, prove the existence of a resinous substance, and that a considerable quantity of matter which cold water does not dissolve, is soluble in alcohol.

From these experiments we may finally conclude that this root consists of—1, tannin; 2, an acid, probably the gallic; 3, gum; 4, resin; 5, wax; 6, fecula; 7, bitter principle, or *apocynin;* 8, colouring matter; 9, woody fibre; and though I have not been able to prove its existence satisfactorily in the dry root, in the laboratory, I very strongly suspect that the fresh root and the juices of the plant contain a considerable quantity of—10, caoutchouc.

Medical properties.—The medical qualities of this plant must be deemed of the most important kind. I was led to the examination* from hearing it spoken of in very favourable terms by a medical gentleman of established reputation of New York, who declared it to be one of the most valuable remedies in dropsy he had ever employed. A careful inquiry into the correctness of this remark has led me to adopt the same conclusions, and the cases which I have detailed will prove to the reader that its efficacy as a remedy has not been misjudged.

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* My attention was first directed to this article as the subject of an inaugural essay.

I have before observed that it is somewhat surprising that a plant possessing such well-marked and energetic, as well as varied properties, and which grows in such abundance in the United States, should not before have been noticed by physicians generally. There are a few, however, who have employed it in their practice with the most decided benefit, and even with extraordinary effect. In some cases its benefits have been more partial, but in none that have come to my knowledge, where it has had a fair trial, has it been entirely inert. It has been used for some years past in country places, amongst those not connected with the profession, with whom it seems to have obtained a full share of the credit which it merits.

In 1831, there appeared in New York a small pamphlet purporting to be a translation of a paper read before the Royal Academy of Sciences, containing the botanical description, chemical analysis, and exposition of the medical properties of a plant of South America, called the Kahinça, *(Chiococca racemosa anguifuga*, flore luteo,) by MM. FRANCOIS, PELLETIER and CAVENTOU. Between this vegetable, and that forming the subject of this thesis, there is a remarkable analogy, and were it not for the difference of the botanical characters, we might readily suppose them to be merely varieties of the same species. They are used in the same disease, and produce nearly the same effects. The *Apocynum cannabinum* bears also a close analogy to the common milk weed, (Asclepias.) Several cases related in PARIS' Pharmacologia by ANDREW HAMMERSLEY, go far to prove the similarity of their medicinal virtues.

This medicine has been administered in the various forms of tincture, powder, pill, and decoction. From the unpleasant effects produced upon the stomach of some patients, by the latter mode of exhibition, the other methods were resorted to, in the hope of producing the same ultimate effect in a more agreeable manner. But it was found after various trials, that their operation was by no means so effectual, and they were abandoned, the form of decoction being retained as the only method by which the qualities of the plant can be efficiently administered. By this method all the properties of the root which are of any use in medicine appear to be fully extracted, and the results of some of the chemical experiments will show to how much greater extent they are imparted to water than to alcohol.

The formula for preparing the decoction will be given in another place.

The Indian hemp when taken internally appears to have four different and distinct operations upon the system:—1st. As an emetic. 2d. As a purgative. 3d. As a sudorific. 4th. As a diuretic.* Each of these effects it produces almost invariably. Its first operation when taken into the stomach is that of producing nausea, if given in sufficient quantity, (which need not be large,) and if this is increased, vomiting will be the result. It very soon evinces its action upon the peristaltic motions of the prima viæ, by producing copious feculent and watery discharges, particularly the latter, which action, when once excited, is very easily continued by the occasional administration of a wine-glassful of the decoction. The next operation of this remedy is upon the skin, where it displays its sudorific properties often in a very remarkable manner. Copious perspiration almost invariably follows its exhibition, to which effect is, in a great measure, attributed by some, the powerful influence it exercises over the various forms of dropsy. The activity of its diuretic properties does not appear to be so great in many instances as in others. In the first three or four cases related, the urinary secretion, although somewhat increased in quantity, was not such as to be commensurate with the effect produced upon the disease by the exhibition of the medicine. In other instances its diuretic operation has been more manifest, causing very profuse discharges of urine, and in a very short time relieving the overloaded tissues of their burden.

Dropsy is, I believe, the only morbid affection for the relief of which the powers of this plant have been brought into successful requisition. Its very active, and often violent operation, would seem, in a great measure, to preclude its use in diseases which are accompanied with much febrile excitement. Yet one might readily suppose that some of its particular properties might be very advantageously sought for in some diseases where much arterial excitement was not present—especially its emetic, sudorific, or cathartic properties, each of which operations might probably be separately obtained by giving it in well regulated doses.

Upon the discussion of that interesting question, whether the power of hydragogue medicines depends upon their agency in increasing the action of the absorbent system of vessels, or of diminishing that of the exhalants, or both, it is not my purpose here to enter; but I may say, that the experiments of a talented and ingenious professional individual of Philadelphia, JOHN K. MITCHELL, M. D. lately given to the public in a paper "on the Penetrativeness of Fluids," would seem to throw a new light upon the question, and lead us to believe that *percolation* through the membranous parietes of the cavities containing the fluid of dropsy, promoted in some manner by the operation of diuretics and hydragogue cathartics, is one means of the ready removal of the liquor.

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* As a *sternutatory* also it has a very powerful effect, as I have experienced in my own case; the fumes, on one occasion, produced, not only long-continued and violent sneezing, with an increased discharge from the Schneiderian membrane, but were unquestionably the exciting cause of an attack of erysipelas of the face and head.

Without further remark or comment upon the plant under consideration, I shall now proceed to relate a few cases, kindly furnished me by some of my medical friends, in which the efficacy of the remedy is most fully proved, and its inestimable virtues placed in their proper light.

CASE I.—"A. B. aged sixty-eight, of temperate habits, was affected after exposure to cold, and fatigue, with difficulty of breathing, particularly when lying in bed, or going up stairs, with a feeling of great weariness and fatigue. Being of a plethoric make, and full habit, he was bled with a view to relieve these symptoms. Some benefit followed the loss of blood in the shortness of breath in particular. The lower extremities began soon to become œdematous, and there was also an evident deposition of water in the cavity of the peritoneum as evinced by fluctuation. All his hydropic symptoms continuing to increase, after free depletion from the blood-vessels, bowels, and kidneys had been practised by bleeding, purging, and diuretics, he was put upon a decoction of the Apocynum cannabinum, and in the course of two days it produced considerable nausea, with occasional vomiting. This was followed by an active cathartic action on the bowels, accompanied with profuse perspiration. All other medicines were now suspended to witness the action of the apocynum singly. Some diuretic effect also accompanied the first action of the medicine—but this was far from being its first or peculiar action. The effects of it upon the skin, stomach, and bowels were readily kept up by a small quantity of the medicine occasionally administered. All the dropsical symptoms soon began to abate, and in a short time he was freed from this aqueous deposit. To keep up its action, he took from time to time a wine-glassful of the decoction, made by *boiling two drachms of the root in three pints of water, to two.* In a few days he could only bear two or three wine-glassfuls in the course of the day. To promote a discharge from his bowels, he would have recourse during convalescence to one or two wine-glassfuls, whenever the state of his bowels might require. He took it also in pills, in the quantity of three or four grains of the powdered root, three times a day. The distressing sickness the pills occasioned, caused them to be discontinued. They did not produce the same beneficial effect upon the bowels and skin, as the decoction."

In this case we have the therapeutic operations of this medicine very clearly instanced; first its action upon the stomach, producing nausea and vomiting, followed by an active cathartic operation, and this succeeded by a very active diaphoretic action, with but a partial effect upon the urinary organs.

Case II.—"Mrs——, ætat. 58, of a full and plethoric habit, has, since the cessation of the catamenia, been subject to congestive attacks of the brain, and has twice been affected with paralytic seizures of the hemiplegic character. To relieve the general and local plethora, repeated venesections have been resorted to from time to time. They have been followed by the happiest effects; but from the crowded state of the large vessels about the heart and general fulness of the system, serous effusions have taken place into the pleura, pericardium, peritoneum, and cellular tissue generally. In this case I have witnessed the happiest effects from the use of the Apocynum cannabinum. The hydropic symptoms have several times been removed by this medicine. Its beneficial operation seems to depend mostly upon the effect it exerts upon the stomach, bowels and skin, and when this effect passes by, the action of it upon the kidneys denotes that it has also that determination."

Case III.—C. D. ætat. 66, of rather a spare habit, has been accustomed to much activity of body and mind, and from occupation has been in the habit of living luxuriously. From time to time for several years past, a frequent dry cough, with shortness of breath in walking fast, and on ascending a flight of stairs, particularly began to denote, that probably some serous deposit was going on in the pleura. This was ultimately confirmed by difficulty of lying down, with œdema of the feet and ankles.

After the usual depletory treatment, which never failed to relieve the symptoms in the early period of the disease, he at length found upon trying the apocynum, that it exercised a complete controul over the disease; and he for a long time used it exclusively in the treatment of his disorder. Such was the confidence he reposed in it, that he cultivated a considerable quantity in his garden for his own wants and the benefit of others. His physical powers, after repeated attacks, were unable to bear up against the disease, and he sunk exhausted and died.

Case IV.—"E. F. ætat. 4 years, had for some time laboured under the most unequivocal evidences of a deposit of water in the ventricles of the brain. Other means being exhausted, the apocynum was had recourse to, and the strength of the child being adequate to the violent action of this medicine, particularly upon the stomach and bowels, and considerably upon the kidneys, the hydrocephalic symptoms gradually yielded, and the child recovered perfectly."

After detailing the foregoing cases, the narrator of them remarks, "from what I have observed of the operation of the Indian hemp, more of its remedial effects are to be ascribed to its action upon the stomach, bowels and skin, than upon the urinary organs. It is in my opinion a valuable addition to the articles of the materia medica, which are derived from the vegetable kingdom."

The particulars of a case, of which the following is a summary, was obligingly furnished me by a professional friend at New York, who had the patient under his care during the trial of the apocynum.

Case V.—The patient was a large, athletic Englishman, of sanguine temperament, aged about fifty years, by profession a cook, and had always enjoyed excellent health until within a few months, when he was attacked with inflammatory affections of his chest and liver, for which he was treated in Washington, D. C. by large depletions, mercurials, &c. His general health appears to have received from this attack, a shock from which it never recovered. When my friend saw him first, in New York, "he was found seated in an arm chair, leaning across the back of a small chair, pallid, breathing with great difficulty, scarcely able to answer the questions put to him, being under such general oppression and debility, with effusion of the chest and abdomen, and general anasarca. He had not been able to lie in bed for upwards of three weeks. He complained of no pain, with the exception of a slight uneasiness of the right hypochondrium, where the liver was evidently enlarged. His pulse was slow and intermittent. He was immediately put upon the use of the Indian hemp, which was continued in this rather hopeless case for three weeks, without any other internal remedial means; after which period he was enabled to return to his usual employment, and actually cooked a dinner for thirty persons, almost without aid. The formula employed in this case was somewhat different from that before mentioned, and was as follows:—℞. Rad. apocyn. cannab. contus., bacc. junip. āā. ℥j.; aqua font. Oiij. S. *Decoque leni igne ad octantes duos, cola, et adde,* Spiritus junip. ℥iv.

"The gin is added for the purpose of preventing its spoiling.

"Of this he took a wine-glassful three times a day, diminishing the quantity if it purged or vomited him too much. Its diuretic qualities did not appear until the second or third day, when it seemed no longer to affect his stomach, but acted very powerfully on his kidneys. He obtained almost immediate relief however, and was able to lie down in bed, and in any position, before the swellings of his hands and feet had subsided, which, for the last few days were kept constantly bandaged. The patient some time afterward died very suddenly, probably from a rupture of his heart, but an examination could not be obtained."

In this interesting case, we find that the remedy had a much greater effect upon the kidneys, than in those before related, and that more benefit is attributed to its operation on these organs than upon any other. Its action upon them appears to have been very powerful. This may, doubtless, in some measure, be ascribed to the additional ingredients in the formula, which are both somewhat diuretic in their operation, but perhaps more to its superior strength. Two drachms only of the root were employed in the cases first given, whereas one ounce was used in this case with the same quantity of water. The effect upon the cutaneous surface does not appear to have been noticed.*

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* Since this essay was written, I have had the pleasure of witnessing another case of entire removal of very extensive dropsical effusions, which occurred during the last summer in the New York Hospital, under my own care, while resident physician of that charity. The patient was a young coloured man, who, when he entered the house, was totally unable to lie down, from the difficulty of respiring in that posture; his articulation was very much impeded; he had immense fluctuating distentions of his abdomen and scrotum, and very large swellings of all his extremities. He was at first put upon the use of the ordinary hydragogue medicines of the house, which course, together with puncturing the scrotum and penis, in a few days gave him some relief, but of short duration, A trial of the properties of the Indian hemp was then made, which resulted in a short time in the complete removal of the adventitious deposit, so that the dyspnœa disappeared, his utterance became unembarrassed, and his belly and limbs resumed their wonted dimensions. The primary effects of the medicine upon his stomach were very distressing, producing such disagreeable nausea and vomiting, that it was found necessary to diminish the dose; but he soon became able to bear its exhibition in the ordinary quantity, particularly when combined with some grateful aromatic. The patient did not live long to enjoy his renewed state of health, but died shortly after, of an attack of apoplexy, though he had been copiously depleted during his illness.

The following letter from Professor Renwick, contains strong evidence of its efficiency:—

"Dear Sir,

"In compliance with my promise, I have to communicate to you the circumstances of the case of a child of mine of dropsy in the head, by the use of the Indian hemp, (*Apocynum cannabinum.*) Not having taken memoranda at the time, I am compelled to trust to memory for the facts.

"The child is a girl, and was then about sixteen months old. After about ten days of sickness, the disease, which had at first been treated as an inflammation probably of the chest, but which had, after the second day, been suspected to be an affection of the head, manifested itself clearly as the latter, with all its most decided symptoms. The sutures of the head were opened; the forehead projecting considerably; the sight of one eye was totally lost, the other retained but little sensibility in the short intervals of stupor rather than sleep, in which she lay. A constant involuntary motion of one arm and leg remained for thirty-six hours. The night preceding the exhibition of the medicine, I had lain down in my clothes in the room, and was called up to see her expire, as the attendants conceived life was nearly extinct. A partial revival however took place, without any lessening of the symptoms. The only treatment used by the attending physician at this time, was the administration of a mixture of rhubarb, magnesia, and aniseed water, and the application of a blister to each temple. By the action of the medicine the discharge from the bowels was kept up, but the urinary functions had ceased altogether for more than twenty-four hours. The physician saw the child about ten in the morning, and while he intimated that the means he had indicated should be persevered in, expressed no hope, and assented forthwith to my request that the Indian hemp should be administered. It was 12 o'clock before it could be procured. It was then prepared by dropping pieces into a coffee-cup until it was nearly full, covering it with water, and stewing it by the side of the fire for about an hour; of this half a tea-spoonful was given every hour, commencing at about 2 o'clock. The physician called about an hour after; the unfavourable symptoms had by this time so far increased, that he informed me the child must die during the night, and probably at the return of the hour at which the crisis had appeared to take place the preceding night. At ten the next morning, he repeated his visit without any hope of finding his patient alive. But by this time, under the constant exhibition of the medicine, a marked change had occurred. The urinary organs had been restored to natural action; the sight of both eyes was perfect; the blisters that had not even caused a redness of the skin, had risen and given a copious discharge. The stupor and insensibility which had permitted the nauseous medicine to be given without difficulty, had passed away, and its administration was forcibly resisted. The quantity was diminished in the course of the day to less than one-half, and the favourable indications continuing, the child was on the next pronounced in a fair way of recovery. The hemp was given for about a fortnight, diminishing the dose gradually until it fell to half a tea-spoonful of the strong decoction in twenty-four hours.

"About a month afterwards, symptoms appeared that seemed to threaten a relapse; on this occasion the Indian hemp was directed by the physician, and they speedily abated."

Columbia College, New York, December 3d, 1832.

There has now been adduced, I think, sufficient evidence to prove that this remedy is entitled to a considerable share of attention from the medical public, and that it is worthy of a distinguished place among the articles of the materia medica. Were it necessary to bring together multiplied proofs of its efficiency, this might easily be done, but I think enough has been said to justify its extensive introduction into medical practice.

I trust that this invaluable plant will be rescued from its unmerited obscurity, and become the means of preserving to the world many valuable lives; or, at least, of meliorating in numerous cases, the excruciating tortures attendant upon some of the protean forms of dropsy, and of smoothing the path "to that bourne whence no traveller returns."*

New York, December, 1832.

Art. III. *Remarks on the Euphorbia corollata.* By William Zollickoffer, M. D., F. C. P. &c. &c.

To such as are desirous of becoming acquainted with the remedial virtues and consecutive therapeutic operation of the vegetable productions which are indigenous to the United States, it is presumed no apology is necessary for my again intruding on the medical community, with another communication that ranges within the limits of the medico-botanical literature of this country; and to those who entertain the sentiment, that the list of our native medicinal agents is at present sufficiently enlarged to effect all that can be accomplished by physical powers; and who presume, that our knowledge upon this subject has attained its ultimate point of improvement, and consequently display no interest in the subject of its ultimate furtherance, the opinion of a distinguished correspondent would seem to be peculiarly appropriate, in avowing that, "from minds capable of adopting such a sentiment science can receive no impulse, and human intelligence no especial illustration."

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* It was not until after this dissertation was written, that the existence of a paper on this subject, published by Dr. M. L. Knapp, in 1826, in a No. of the "American Medical Review and Journal," came to my knowledge. Before this, I was not aware that I had been preceded in the investigation of the properties of the Indian hemp. Although the results of, or rather the inferences deduced from some of the experiments performed by each of us, do not entirely agree, I can bear my testimony to the general accuracy with which that paper is drawn up.

Dr. Knapp appears to have administered this remedy in some other diseases with considerable benefit. When the powdered root was given in doses of grs. xv. it operated as a salutary emetic, in his own person, as well as upon others; being closely allied in this respect to ipecacuanha, for which medicament, he sometimes substituted it. It had the effect also of greatly lessening the frequency of his pulse. As an alterative, and expectorant likewise, he gave it in doses of gr. ss. to gr. ij.

The Euphorbia corollata first attracted my attention in the year 1819; and in the spring of 1821, I transmitted several of its recent roots to Professor BIGELOW, who transplanted them in the Botanic garden, and in his American Botany he has described and figured the plant.

The Genus Euphorbia was placed by LINNÆUS in the class *Dodecandria*, and the order *Trigynia.* MICHAUX has transferred this genus to *Monœcia, Monadelphia.* It belongs to the natural orders of *Tricoccæ* of LINNÆUS, and *Euphorbiæ* of JUSSIEU.

GENERIC CHARACTER.—The flowers of the Genus Euphorbia are characterized by a *calyciform involucrum* with *four* or *five segments* like *petals*, and the same number of *interior segments* like *nectaries. Stamens* twelve or more. *Filaments articulated.* Fertile flower *solitary, stipitate, naked. Styles three, bifid. Capsule three-seeded.*

SPECIFIC CHARACTER.—The species Corollata is distinguished from all of the other individuals belonging to this extensive genus by its *five-rayed umbel*, which is *three-parted* and *dichotomous.* The *leaves* and *involucra* are *oblong* and *obtuse.* The *segments* of the *calyx* are *obovate, petaloid*, and *coloured.*

Professor Bigelow has given the following excellent description of this plant. He says it—

> "Has a large branching root, which sends up a number of stems, frequently from two to five feet in height. They are erect, round, and in most instances simple. The leaves are scattered, sessile, oblong, obovate or linear, a little revolute at the margin, smooth in some plants, very hairy in others. The stem divides at the top into a large, fine-rayed umbel, supported by an involucrum of as many leaves. Not unfrequently a small axillary branch or two arise from the sides of the stem below the umbel. The rays of the umbel are repeatedly trifid or dichotomous, each fork being attended by two leafets and a flower. The top of the stem or centre of the umbel is turgid, and often bears a precocious flower. The calyx is large, rotate, white, with fine obtuse petal-like segments, from which the name of the species has been taken. The nectaries or inner segments are fine, very small, obtuse projections, situated at the base of

the segments. Stamens a dozen or more emerging, two or three at a time with double anthers. Germ pedicelled. Capsule three-celled."

The Euphorbia corollata is a very common plant in some parts of Virginia and Pennsylvania. In some districts of Maryland, and more particularly in Anne Arundel county, it grows in the greatest abundance, where it is recognised by the common and local appellations of *milkweed*, *snake's-milk*, *ipecacuanha*, and *Indian* physic. It delights and flourishes in a poor, dry, and sandy soil. It is rarely discovered in the woods, but in fields which are cultivated every two or three years. The farmers in Anne Arundel county, where the fields are literally overrun with it, have frequently told me that the small grain sustains considerable injury from its rapid growth in the early part of the spring, checking the natural process and progress of vegetation in the grain, and that the ordinary means which are made use of, (such as ploughing and harrowing,) in order to kill bluegrass, have the effect of increasing the quantity and rapid growth of this plant. It is never eaten by animals. The stalks which arise from the common trunk of the root, are sometimes as many as thirty, and from this down to a single one. The largest roots that I recollect seeing, measured from an inch to two inches and a half in circumference.

Solubility.—Alcohol, wine, and water are the best menstrua for extracting its active qualities. The alcoholic and watery extracts are equally active. Two thousand one hundred and sixty grains of the recent root afforded one hundred and two grains of aqueous extract; and the same amount, by digesting in alcohol, gave one hundred and twenty-three grains of alcoholic extract.

Desirous of ascertaining the relative proportions of *epidermis*, *cortical*, and *ligneous* matter entering into the organization of the root of the Euphorbia corollata, I selected a portion of healthy root, which weighed 893 grains: on examination the *epidermis* weighed 84 grains, the *ligneous* or woody part 189, and the *cortex* or bark 620. From these results it seems that the root is made up of nearly two-thirds of the part in which its activity exclusively resides. The separation of these several parts of the root I effected with the greatest possible care.

Chemical composition.—I digested for seven days, ʒij. of the powdered root in ℥iij. of sulphuric ether; this was then passed through bibulous paper, which, on the addition of rectified alcohol, (carefully prepared by myself,) gave a precipitate. ʒis. of the root, which had been digested for the same period in ℥iij. of rectified alcohol, assumed on the addition of distilled water a lacteous turbidness.—ʒij. of the root which had been permitted to digest for four days in distilled water, after being filtered, exhibited, on the addition of rectified alcohol, a turbid aspect. From these results the chemical composition of this root may be inferred to consist of caoutchouc, resin and mucous. This examination was made in imitation of that instituted by Professor Bigelow, and with effects produced by the concurrence of the same coöperating causes, perfectly analogous to those which were accomplished in his hands.

Incompatible substances.—Kino exhibited in combination with the corollata, interferes so much with its medicinal operation as to render it perfectly inert; while the kino itself undergoes such a change in its remedial powers, as a consequence of its consociation with the corollata, as entirely to alter the character upon which its astringency depends. Catechu produces the same effect, and the same interchange of reciprocal action occurs. From this circumstance I am led to the conclusion, that all astringent vegetable substances are at variance with the therapeutic operation of the corollata. In two instances I took twenty grains of the powdered root out of a phial, containing the article sufficiently active to excite *emesis*, in combination with six grains of powdered kino, and no sensible effect of the corollata was experienced, or did the kino display the least perceptible astringent operation in altering the period at which I usually have a dejection, that is, about half an hour after breakfast every morning. Nine grains of the catechu, with twenty-five of the corollata was attended with exactly consimilar results. Opium given in conjunction with it, interferes only with its emetic operation, and it should not therefore be given in combination when the object of the practitioner is to produce *emesis.* Acetic acid interrupted its ordinary operation in two instances, (and the only two cases in which I tried the experiment on myself,) by causing it to pass off by the bowels.

Pharmaceutic preparations.—The vin. Euphorbiæ corollatæ, and the pulvis corollatæ compositus. The former preparation I have made in the following way:—R. Radicis Euphorbiæ corollatæ, ℥i.; vini albi hispanæ, octarius unus. dosis ʒii. ad ℥ss.; emesis provocandi. The latter formulæ is in imitation of the pulvis ipecacuanhæ compositus, and does not differ in the proportions, except in substituting the corollata in the place of the ipecacuanha. Both of these preparations are as prompt and effectual as remedial agents.

Medical uses.—This vegetable is emetic, diaphoretic, expectorant, and epistastic. As an emetic it is mild and certain in its operation, rarely occasioning pain or spasms, and exciting little previous nausea or giddiness; possessing an advantage over some other remedies of this class, that when it does not prove emetic, it passes off by the bowels. The dose of the powdered root that is required to excite emesis, is from fifteen to twenty grains. This substance is better calculated to effect certain indications, than the more nauseating articles belonging to this class of remedies; and as the judicious practitioner, in the selection of an emetic, will always be guided by the nature of the indication which he intends to fulfil, if his object be to evacuate the stomach quickly and completely, he will avoid those emetics that are distinguished by their nauseating tendency, as in cases of disease which depend on a disordered state of the stomach, in connexion with undue distention, and the presence of acrid and indigestible matter: if, on the other hand, his intention be to influence some remote organ through the sympathetic powers of the stomach, an emetic of an opposite tendency may be better calculated to answer such indications, inasmuch as the nausea which they induce, greatly lessens the force of the circulation; and as the energy of absorption is generally in an increase ratio to that of the circulation, we frequently obtain from nauseating emetics considerable assistance in the treatment of different dropsical affections. The corollata is only calculated to effect the indications which are accomplished by the primary operation of emetics, for whenever our object is to evacuate the stomach, and prevent absorption, we must take care to cut short the nauseating stage, (by such articles as produces little or none of this effect,) a precaution which is highly important in the management of cases in which poisonous substances have been taken into the stomach. My object at present is not to discuss the operation of emetics and the diversified affections in which they are not unfrequently competent to the production of the most satisfactory results, for this to me would appear to be foreign to the contemplated intention I am desirous of fulfilling by the communication of this paper. What I have said is merely intended to show the applicability of this plant to particular cases. When it is administered with the view of procuring its diaphoretic operation, the quantity exhibited at each dose should not exceed four grains, and this proportion should be given every three hours. The pulvis corollatæ compositus may very frequently be used, particularly when a stimulant diaphoretic is indicated; for from the operation of this compound remedial agent, it would seem that whilst the opium increases the force of the circulation, the corollata relaxes the exhalant vessels, and consequently induces a copious diaphoresis. The action of each of these articles would appear to be mutually lost, and converted into a powerful diaphoretic, thus affording a very beautiful illustration of the combination of medicines which excite different actions on the stomach and system, in consequence of which new or modified results are produced. The dose of this combination is the same of that of the Dover's powder. The expectorant operation of this plant may be procured in the dose of three grains, occasionally exhibited in a little honey, sugar and water, or any other suitable vehicle. In relation to its epispastic property, I would remark, that it possesses an advantage over the ointment prepared with the antimonium tartarizatum, in producing a beautiful display of pustules in twelve or fifteen hours after its application, which passes off in two or three days, without occasioning the least inconvenience whatever to the patient. The root in its recent state is merely to be applied contused to any part of the body, and permitted to remain a few minutes only, when a sufficient quantity of the lactescent matter will remain to produce the intended effect. A continuation of the pustular eruption may be kept up, by making an application of the contused root every forty-eight hours. It is the only vegetable substance that is entitled to attention on the account of the property it possesses of exciting an action on the surface in this way; and the only one that is calculated to answer the same purposes of the tartar emetic ointment.

ART. IV. *Personal Observations and Experience of Epidemic or Malignant Cholera in the City of Philadelphia.* By SAMUEL JACKSON, M. D. Assistant to the Professor of the Institutes and Practice of Medicine and Clinical Practice in the University of Pennsylvania. [With two plates.]

(Continued from Vol. XI. page 346.)

THIRD period, or incipient concentration.—The phenomena of this stage of the disease, are the mere exaggeration of those attached to the first periods; but there are superadded additional phenomena, the secondary effects or consequences of the persistance of the irritation developed in the alimentary mucous membrane, the disorders that state induces in important functions, and the evacuations or losses it occasions—effects that are generally connected with a particular state of predisposition arising out of the constitution, habits, previous diseases, age, or other individual circumstances, and the specific action, probably, of the epidemic principle.

In this period, as in the first and second, the leading phenomena proceed from the disordered condition *of the alimentary canal.* Vomiting, purging, and abdominal pains, to which are now combined almost invariably, excessive, unappeasible thirst, and appetence for cold drinks, are the most constant and urgent of the symptoms. The evacuations upwards and downwards are frequent, sometimes incessant, and are copious or excessive in quantity. The fluid now discharged is most generally thin, watery, having a very strong resemblance to rice or barley water; in some cases nearly as transparent as spring water; and most frequently after standing exhibits a flocculent precipitate with a supernatant clear fluid.

The amount of these evacuations is in some instances enormous, almost incredible. In hospital cases I have seen several gallons discharged in a few hours. In one case, during the third and fourth periods, in the space of five or six hours, three large bucketfuls were received from the stomach besides the evacuations from the bowels. Some of this quantity was doubtless the drinks taken, but the larger proportion was the animal fluid.

The evacuations upwards and downwards do not always correspond. Often they are opposed to each other. When the stomach is most affected, and the discharges upwards most copious, the lower intestines do not manifest as violent an irritation, and the dejections are often small in quantity; the reverse also prevails. When the greatest disorder is in the bowels, and the largest evacuations are from the intestines, the stomach is but little affected, and sometimes is entirely quiet, no vomiting taking place, or being speedily controlled.

The rapidity with which the patient passed through the stadia of the disease, and reached the period of exanimated collapse, corresponded, in my observations, most usually with the copiousness of the evacuations, and when these could be arrested, the case was proportionally prolonged. The apparent exceptions to this rule belong only to individual peculiarities. Persons excessively enfeebled by age, or by defective nutrition from long intemperance and chronic diseases, and whose sum of vital fluid and energy of vital force, are already diminished, sink very rapidly into collapse under evacuations and losses comparatively of small amount, yet which, relatively to themselves, are excessive.

In the *respiratory function* the symptoms in this stage generally assume a higher degree of intensity. The sentiment of oppression in the chest is often most distressing, the respiration is short and frequent—a feeling prevails as though the air was confined and close—an intense sense of suffocation I witnessed in several cases, the patients constantly demanded air, and desired to be placed in the open atmosphere, complaining of the closeness and oppressiveness of the room, though of large dimensions. The temperature of the expired air in this stage fell below the natural standard, indicative of the diminished vitality of the lungs, and altered condition of their circulation and functions.

In the *circulatory functions* important modifications are present. The general circulation is diminishing and failing. The contractions of the heart are feeble, the pulse consequently small, and without force. A sentiment of great oppression and even anguish often is experienced in the heart—it feels full to bursting from the accumulation of blood in its cavities, and the incapacity of this organ to expel its contents. This feeling also is an innate sensation of the organ most generally attending the cessation of the general circulation. It announces this condition to the economy.

In the organic circulation or the movements of the sanguine fluid in the parenchyma of the organs, a profound change has taken place. In the exterior surface it is deficient and stagnant. The fingers and toes are discoloured, livid or blue. They are shrunken and shrivelled. The circulation as seen in the lips and gums is languid and stagnant. The blood can scarcely be expelled by the pressure of the finger, and it returns with slowness.

The *animal temperature* has fallen below the natural standard, following the diminished energy of the organic circulation. A sense of heat is, however, frequently experienced and complained of in the abdomen, particularly in those cases where the dejections are not very frequent and copious. The abdomen also is in most cases of a temperature higher than any other portion of the body. The thermometer placed under the tongue indicated 90°, 91°, 92° Fahr. the temperature of my patients in this stage. The tongue is cold to the touch.

The *cutaneous surface* now exhibits new phenomena. In the extremities, as already remarked, it is affected in its colour; is shrivelled and inelastic. In this period an exhalation, exudation, or transudation, of a clear, inodorous, watery fluid, is abundantly poured forth from the whole exterior surface. It forms in drops, rolls down in streams, and collects in small pools in the depressions above the clavicles, sternum, and other positions of the body. The clothing of the patient, and even the sheets are saturated. The skin has a cold, soaked, and lifeless feel when touched. In the face the same shrinking and shrivelling of the skin and subcutaneous cellular tissue has taken place as in the extremities, rendering the firm and bony prominences more projecting, and causing the eyeballs to be deeply sunken in their orbits. The skin of the neck presents the same shrivelled condition, and if pinched up does not immediately retract. The appearance and the effects of extreme caducity, is in this manner rapidly induced, and proceeds from the same cause—the exhaustion and diminution of the fluid elements of the organism. In the one case, a slow and natural alteration, the work of time—the other, the rapid result of disease.

The *symptoms* proceeding from the disturbances of the *nervous system*, in this period, present an augmented, and, in many cases, acquire their greatest intensity. The muscles of the thighs and legs were often, from their rigidity, firm as solid bodies, or were contracted and knotted by the severity of the cramps. The muscles of the upper extremities, though they did not always escape, yet in no instance were as violently affected as those of the lower. In many cases intense neuralgic pains tortured the patient, the commotion of the nervous system falling on the organs of sensibility, while those of locomotility were either quiescent, or but partially disturbed. In a majority of the hospital cases, the sensibility appeared morbidly acute. Sinapisms and other painful remedies could be borne for a few minutes only. In four or five instances in the complete collapse, the sensibility of the skin was greatly diminished. Is not the sense of heat felt by the patient, while the temperature of his surface is below the natural standard, to be referred to a morbid sensibility? The intellectual faculties and the senses manifested no aberration. The mind was, however, enfeebled, and the moral sentiments dull and obtuse.

The *glandular secretions* were sensibly affected in this period. The urine was either wholly suppressed, or passed only in very minute quantities. The secretion of the bile appeared also to be suspended, or but formed to a limited extent. Very seldom was any appearance of bile to be detected in the matters vomited or dejected from the bowels. In some instances, however, green bile tinged the evacuations from the stomach. I observed the same fact in the cholera shed at Montreal. The case was exceedingly malignant. The hue of this patient's skin, a Swiss sailor, was plumbagenous; the green fluid continued to be ejected until his death. The tears are deficient; no feelings of distress bring moisture to the eye.

The exudation from the dermoid surface, external and internal, is greatly increased; and vitiated mucous, a creamy gruel-like matter, contained in large quantities in the intestinal discharges, or found in the intestines after death, are evidences of augmented as well as perverted function in the secretory actions of the alimentary mucous membrane. The absence of expectoration, the aridity of the mouth and fauces, the huskiness of the voice, are evidences that the secretions of this portion of the mucous membranes are deficient.

The following cases are examples of the third period, or commencing collapse.

Case XVII. *Diarrhœa six days; vomiting; cramps; cold surface; cold breath and tongue; feeble pulse; reäction; recovery.*

Letitia Lowber, a black woman, aged twenty-six years, was admitted in the Hospital, No. 5, at 11 o'clock, P. M. August 5th. She has been affected with diarrhœa for the last six days. Eat some indigestible food yesterday. This morning vomiting came on, and was seized with cramps in the lower extremities.

Condition on admission:—Skin cold and moist; cramps of the legs with occasional spasms; mind unaffected; temperature of breath and tongue, 90° Fahr.; voice changed in its character; respiration regular; pulse feeble, pulsations 128; thirst.

Sinapisms applied to epigastrium, to legs and arms; frictions made to the whole surface with brandy, having Cayenne pepper infused in it; dry heat subsequently by the application of heated oats in bags; acetat. opii, gtt. xx. and comphorated solution of bi-carbonate of soda iced, ℥ss. every fifteen minutes.

1 *o'clock, A. M.* Purging. Enema of acetat. opii, gtt. xl. in aquæ camphoratæ, Oss.

August 6*th*, 8 *o'clock, A. M.*—Has purged three times since last report, and vomited three or four times; discharges "rice water;" cramps occasionally, but much reduced in force and frequency; pulse 96; the skin warmer, soft to feel; profuse perspiration has ceased; tongue and breath of nearly natural temperature; stomach becoming settled. Iced camphorated solution of soda every two hours; iced gum water for drink.

10 *o'clock, A. M.* Nausea and disposition to vomit; in other respects improving; pulse rising; has acquired volume and force, and is slower.

11 *o'clock, A. M.* Vomited. Iced camphorated effervescing draught with acetat. opii, gtt. x.; same drinks; dry heat as before and sinapisms.

3 *o'clock.* Skin warm; tongue warm, moist, and slightly furred; pulse remains in its improved state. At 2 P. M. took some mutton water; continue iced saline drinks as before.

5 *P. M.* Improvement continues; frictions occasionally employed, and the epigastrium and limbs afterwards covered with cloths steeped in camphorated spirits; enema of carbon. sodæ, ʒii. in tepid water, Oj.

11 *o'clock, P. M.* In comfortable state; no cramps; skin warm; vomiting and purging have ceased; pulse natural; disposed to sleep; dry heat to lower extremities.

August 7th, 7 o'clock, A. M.—Did not sleep well; was restless; skin warm and dry; pulse excited. Black tea and iced water for drink; chicken water.

1 *o'clock, P. M.* Is feverish; pulse 108, soft and full; hands and feet colder than the rest of the body; has pain in epigastrium; abdomen tumid; eyes injected. Twenty leeches to epigastrium; extremities rubbed with camphorated spirits; dry heat to be applied to feet.

3 *o'clock, P. M.* Skin warm and with slight moisture; tongue furred and dry; a discharge from the bowels of a thick whitish fluid; has passed no urine since admission; pulse 112, compressible; eyes injected; pain of epigastrium diminished; leeches filled well, and bites continue to bleed; patient refuses the chicken water, and desires only the iced drinks; saline solution, ℥i. every two hours.

7 *o'clock, P. M.* Much better; symptoms of reäction are subsiding.

9 *o'clock, P. M.* Pain in epigastrium entirely relieved; pulse less frequent; feels more comfortable. Continue iced drinks and saline solution.

August 8th, 8 o'clock, A. M.—Three discharges from bowels since last evening of thin and watery fluid; has not urinated; other symptoms nearly disappeared. ℞. Ol. junip. gtt. v.; spt. nitr. dulc. gtt. x. to be given every two hours in sweetened water.

4 *o'clock, P. M.* Convalescing; has passed about two ounces of urine.

8 *o'clock, P. M.* Has urinated freely; convalescing.

August 9th. Passed a comfortable night; symptoms have disappeared. Chicken water for diet. Discharged from hospital on 11th of August.

Case XVIII. *Intemperate in habits; preceding diarrhœa; vomiting and purging; cramps; surface cold; hands and feet livid and shrivelled; tongue cold; reäction; recovery.*

August 6th, 7 o'clock, A. M.—Mary Donnelly, Irish woman, aged twenty-seven; nervous-lymphatic temperament; light hair and eyes, and fair complexion; habits of intemperance; was discharged on Saturday 4th inst. from Arch street prison; had been slightly affected with diarrhœa for the last two weeks. This morning was attacked with vomiting and purging; soon after was brought into the hospital.

On admission, she presented the following symptoms. Skin cold and moist; tongue clean, cold to feel; cramps in the legs; hands and feet livid and shrivelled; elasticity of skin lost, does not retract when pinched up; pulse feeble; thirst very great; complains of internal heat; temperature of abdomen moderate; no pain from pressure; purging from the bowels, and vomiting of "rice water," which have been incessant from the period of attack this morning.

Treatment directed was sinapisms to legs and arms; dry heat to lower extremities; frictions; evaporation of camphorated spirit to be constantly maintained from the abdomen, by keeping it covered with linen saturated with the tinct.; iced gum water, in which bi-carbon. sodæ was dissolved, for drink; camphorated effervescing draught, with acetat. opii.

2 o'clock, P. M. Symptoms aggravated; whole surface livid and cold; drenched with perspiration; pulse feeble; cramps; vomiting, and purging. Directed hot brandy-toddy, and the following prescription:—Aq. ammon. alcohol. ʒi.; ether. sulphuric, ʒii.; mucilage, ℥vi. ℥ss. to be administered every two hours; frictions to be continued.

5 o'clock, P. M. Pulse very feeble; surface universally cold, livid, shrivelled, damp with moisture; cramps in the legs; vomiting is restrained; occasionally ejects a limpid fluid in small quantities; purging not as copious. Enema of solution bi-carbon. sodæ, with acetat. opii, gtt. xxx.; frictions to extremities and body with warm spirit of camphor; the abdomen, legs and arms, after the frictions, enveloped in flannels saturated with spt. camphor; continue toddy.

8 *P. M.* Symptoms improving; slight reäction.

11 *P. M.* Still better; reäction more decided; disposed to sleep. Iced gum water for drink; stimulants suspended.

7th, 7 o'clock, A. M. Did not sleep well, was restless; much improved; skin is warm and pleasant; pulse increased in force, nearly natural. Iced drinks continued.

11 *o'clock, A. M.* Continues to mend; bowels purged three times, discharged a watery fluid. Enema of solut. bi-carbon. sodæ, Oj.; acetat. opii, gtt. l.

2 *P. M.* Enema remained half an hour; bowels not moved since; skin warm, soft, and pleasant; pulse natural; stomach settled; the shrivelled and livid appearance of the skin very much diminished, but not entirely disappeared; has passed no urine since yesterday

morning. Iced gum water for drink; loathes the toddy, which she says sickened her this morning.

9 *P. M.* Has nausea; vomiting has not returned. Aq. calcis, ℥ss. in equal quantity of milk every hour.

8*th.* Appears much better; has not urinated; complains of pain in pubic region; warm fomentations applied.

4 *P. M.* Complains of pain and soreness in epigastrium, augmented by pressure; skin warm; pulse 104; feels as though vomiting would relieve her stomach; tongue has become red; thirst urgent. Iced mucilage for drinks, and small pieces of ice kept constantly in the mouth. Effervescing draught cooled with ice.

10 *P. M.* Improving; discharges from the bowels of more natural appearance; took a cup of tea in the evening, it was immediately rejected by vomiting. Continue cold effervescing draught.

9*th*, 7 *A. M.* Had a good night; is convalescing. Chicken water.

10 *o'clock*, *P. M.* Continued to improve during the day. Discharged from hospital August 10th.

Observations.—In this case the previous circumstances of the patient—her habit of abusing the use of ardent spirits—the debility that had followed her temporary confinement in prison—the breaking up suddenly of the habit of daily stimulation, and the exhaustion occasioned by the protracted diarrhœa, rendered the employment of diffusible stimulants imperative for a short period, to avert the danger of sudden sinking. It is to be remarked in this case, that when reäction, though slight, was brought on, immediately the stimulants were instinctively rejected by the patient. To the language of the organs I am accustomed to listen always with great deference, and generally find the instinctive wants, or specific sensations of the organs, the safest guides to follow.

Case XIX. *August* 11*th.*—Elizabeth M'Connel, white woman, aged twenty-four years, admitted into Hospital, No. 5, at 7 A. M. She reports herself as having had diarrhœa for the last four days. At the period of admission, her symptoms were, frequent vomiting of a watery fluid, slightly tinged with green; cramps and spasms of abdomen; surface cold and moist; great oppression in the chest referred to the heart. An injection of flaxseed mucilage and laudanum were administered to check the diarrhœa.

8 *o'clock*, *A. M.* Same state; v. s. ℥x.; effervescing draught.

2 *o'clock.* More comfortable; oppression removed; skin comfortable.

8 *P. M.* General improvement; diarrhœa less frequent.

12*th.* Stomach nauseated; occasional vomiting. Renew the effervescing draught. Occasional watery discharges from the bowels.

2 *o'clock.* Decoction of rhatany and oak bark to restrain diarrhœa.

13*th.* Decoction of rhatany rejected by the stomach soon after being taken; discontinue it; skin warm; pulse rising. Twelve cups to epigastrium; carbonated water with bi-carbon. sodæ for drink; took during the day black tea, and chicken water.

14*th.* Slight febrile movement; stomach nauseated, and occasional vomiting. Iced carbonated water with soda; iced gum water, and arrow root for nourishment.

15*th.* Slept well; symptoms have all disappeared except nausea and occasional vomiting; no diarrhœa. Calomel, gr. ss. every two hours; same diet.

16*th.* Convalescent, and discharged to general hospital.

Observations.—The principal difficulty in this case was the irritable state of the stomach continuing after the subsidence of the general symptoms of cholera. As there was nothing threatening in this state, a very active treatment was not called for. The small doses of calomel appeared to exercise the most controlling influence in abating the irritable condition of the stomach.

Case XX. *August* 10*th*, 11 *o'clock*, *A. M.*—Was admitted into Hospital, No. 5, Nancy Bethe, female, native of Ireland, of good constitution, temperate, aged thirty-eight years, in the forming stage, was taken yesterday with diarrhœa, and has vomited frequently this morning; tongue cool; pulse feeble; and surface of body cool; is much distressed in mind, having lost her husband by cholera. Treatment—℞. Aqua camph. Oj.; bi-carb. sodæ, ʒii.; tinct. opii, gtt. l. M. ft. enema; sinapisms to extremities, and dry heat by bags of hot oats; frictions with camphorated spirit.

2 *o'clock*, *P. M.* Complains of thirst. Ordered pieces of ice to be held in the mouth.

5 *o'clock*, *P. M.* Has had three discharges from her bowels since 3 o'clock, P. M. Ordered an enema of flaxseed mucilage, Oj.; tinctura opii, gtt. lv.

10 *o'clock*, *P. M.* Is much better.

11*th*, 8 *o'clock*, *A. M.* Is convalescent; was anxious to return home, but was desired to remain for a day or two.

10 *o'clock*, *A. M.* Has clandestinely left the hospital.

12*th*, 8 *o'clock*, *A. M.* Has returned, having endured great fatigue from washing several rooms, a quantity of dirty clothing, and scrubbing a large court yesterday. Imprudent in diet; eat sausages for supper. Has now severe cramps in her limbs; very frequent discharges from her bowels of a rice water appearance, and has frequently vomited a similar fluid; great soreness at the epigastrium. Fifty leeches to epigastrium; frictions with hot spirit of camphor; dry heat by means of hot oats to inferior extremities; enema of starch water, Oj.; bi-carb. sodæ, ʒj.; tinct. opii, gtt. xxx.

12 *o'clock, A. M.* Nausea and vomiting. ℞. Bi-carb. sodæ, ʒss.; aqua puræ, ℥i.; succ. limon. q. s. ad sat. to be given effervescing.

4 *o'clock, P. M.* Has dosed a short time; has had several discharges from bowels, and has vomited. Effervescing mixture as before.

6 *o'clock, P. M.* Has vomited the rice water fluid as heretofore, which, when tested with litmus water, gave indications of the presence of acid. ℞. Bi-carb. sodæ, ʒiii.; iced water, Oj.; dose one to two table-spoonfuls occasionally.

11 *o'clock, P. M.* Has not vomited so frequently since the last prescription.

13*th*, 8 *o'clock, A. M.* Discharges from stomach and bowels greatly diminished. Ordered a table-spoonful of decoction made from rad. rhatany, ℥ss.; cort. quercus nig. ʒi.; aquæ puræ, Oj.

11 *o'clock, A. M.* The last prescription was vomited soon after it was administered. Takes arrow root for nourishment, and carbonated mineral water in doses of two table-spoonfuls for drink.

3 *o'clock, P. M.* Has eaten soup clandestinely, which produced a return of the discharges from the stomach and bowels.

6 *o'clock, P. M.* Is much prostrated by the frequent discharges excited by her imprudence, is now restricted to arrow root for nourishment, and gum water for drink.

11 *o'clock, P. M.* Discharges from bowels and vomiting greatly diminished.

14*th*, 11 *A. M.* Convalescent.

15*th*, 11 *A. M.* Same.

16*th*, 11 *A. M.* Cured.

Observations.—Bethe accompanied her husband to the hospital; he was when admitted in the last period of the disease, and in its worst form. She assisted the attendants in his treatment. Soon after his death she manifested symptoms of the disease—she was placed immediately under treatment, and the symptoms disappeared. Disliking the restraint placed on her eating, she left the hospital the next day without permission. She immediately went to work, washing rooms and clothes, and eat heartily of sausages and fresh bread. A relapse ensued, and she reëntered the hospital with the disease advanced to the third period. The contents of the stomach had been ejected by vomiting, but the stomach continued to exhibit marks of great irritation; vomiting was frequent; the tenderness of the epigastrium considerable, and she complained constantly of the pain she experienced in the stomach. The application of the leeches to the epigastrium produced a prompt effect in arresting the frequent vomiting and discharge of watery fluid. For some hours she continued still to be affected with nausea and repeated efforts at vomiting, though very little fluid was discharged. The treatment was then directed with a view to keep in check the return of the copious and exhausting evacuations, to excite the external surface, and to furnish a new supply of fluids by giving her frequently to drink of iced water, iced carbonated water, and iced saline solutions. Under this method the symptoms were arrested in their progress—they continued to abate, and then very gradually reäction and diffusion became apparent, with a restoration of the functions and energies of the economy.

Case XXI. *Cholera, third period; vomiting and purging; cramps; coldness of surface and extremities, with shrinking of skin; diarrhœa for three days before admission; intemperate habits; reäction and recovery.*

August 11*th.*—James Dick, a native of Scotland, lived in the same house with Bethe and his wife, was admitted to the hospital at 8 A. M. This man has been intemperate, and for some days he, as well as Bethe, have been almost living on whiskey. Was attacked on the 8th with diarrhœa, for which he has received no treatment.

On admission the external surface was cold; hands and feet cold and shrivelled; tongue cold and moist; mucous membrane of lips and gums livid, cold, and vessels deeply injected—the circulation in it feeble. The pulse frequent and feeble; countenance expressive of great anxiety and distress; vomitings and purging of rice water fluid; cramps.

Sinapisms were applied to epigastrium, to the chest, and the extremities; effervescing draught; iced drinks as in preceding cases. No amendment during the day; pulse failing; vomiting and purging continue, but less frequent.

8 *P. M.* In consequence of the habits of the patient, ordered weak brandy-toddy for drink, and gave carbon. ammoniæ, gr. v. every hour; copious dejections from bowels, and at same time vomiting; character of discharges the same. Enema of starch with tinct. thebaic, gtt. lx.

12*th*, 8 *A. M.* Purging continues; covered with cold sweat; complains of great uneasiness at the epigastrium; pulse feeble; light wandering of the mind. The external surface was rubbed with powdered hot chalk; an enema of decoct. rhataniæ, ℥iss.; starch water half a pint, and tinct. thebaic, gtt. xx. directed, and to be repeated after every evacuation. The stimuli were withdrawn, and twenty leeches applied to the epigastrium; the first injection was retained half an hour.

12 *M.* Purging continues; decoction of rhatany and oak bark, ℥ss. every two or three hours.

6 *P. M.* An evident improvement; vomits occasionally—fluid is bilious; the fluid turned litmus water green. Effervescing draught.

13*th.* During the night has had very few evacuations; complains of nausea, but has ceased to vomit. Is decidedly in a better condition; cold sweat has disappeared; skin warm; pulse has more force; complains of pain in right hypochondrium, and comatose symptoms appearing. Eight ounces of blood were drawn from the epigastrium and right hypochondriac regions by cups; gum water for drink; arrow root for nourishment, and the following saline solution—Bi-carbon. sodæ, ʒi.; aq. carbonat. ℥viii.—℥ss. to ℥i. every fifteen minutes or half hour.

4 *o'clock, P. M.* Improving; vomited once.

8 *o'clock, P. M.* Continues to improve.

14*th.* Passed a good night; no further evacuations. The amendment continued to progress during the day, and in the evening at 6 P. M. was pronounced convalescent.

15*th.* Nausea with slight vomiting; no alvine dejection for upwards of twenty-four hours. Calomel, gr. ss. every three or four hours; the saline drink continue. Discharged to convalescent hospital.

Observations.—Dick had been indulging in his habits of intemperance for some days prior to his attack. He was much exhausted at the time of his admission into the hospital, by the diarrhœa, which was then of three days continuance. His habitual abuse of ardent liquors, in connexion with his state of exhaustion, imposed a necessity of resorting to stimulants in the first instance to prevent his sinking. On the second day from his entrance, the evidences of gastric inflammation presenting themselves, the stimulant treatment was immediately abandoned. The object of their administration was then obtained. The organs were resuming their energies—a local reaction was being established. Under its influence the serous effusions—the waste of the fluids—are arrested. The immediate danger from exhaustion produced by profuse losses, disappears as inflammation is substituted for irritation—but unless this be checked in time, an equal danger, though more remote, assails the patient. The purely antiphlogistic treatment was then adopted, the inflammatory symptoms were arrested, and the case terminated favourably.

In the preceding cases the characteristic symptoms of the third period are well marked. The losses by the evacuations, from their quantity, now begin to be felt. The circulating fluid manifests a commencing change in its condition, it is deficient in quantity, the force of the circulation is diminished—the blood is not propelled into the whole area of the vascular system. It abandons the exterior surface—other organs do not receive their appropriate supply—to the primary interior determination is now added a fixed concentration, a paucity of the fluids, exhaustion of the forces of the circulation, and consequent inability for the production of reäction.

The constitutions of the patients the subjects of the foregoing cases being good, the object of the treatment was to allay internal irritation—to supply by copious drinks the losses of the watery fluids of the economy, and to produce diffusion by external revellents.

Fourth period, confirmed collapse.—If the disease be not arrested in the third period, the patient soon passes into the fourth, when his condition is truly desperate. To adopt the phrase of MAGENDIE, he is *cadaverized.* The appearance he exhibits is frequently that we may conceive of a corpse, inhumed some days, suddenly reänimated. In the greater number of cases the regular progression of the disease, such as has been described, is very evident, and may readily be traced. In some few, the patient sinks at once into the exhausted and moribund state, which is the character of this period. Those individuals were the very aged, persons of infirm health, and broken down constitutions, the effect of disease, or gross intemperance. The period occupied in the approach of this stage generally corresponded with the forces of the patient and the extent of the losses sustained from the evacuations.

The phenomena attending on this period, are those of the preceding carried to the point of extreme aggravation. For the most part, it is a moribund condition—it is a state analogous to the last periods of particular cases of malignant fevers, and to the algid form of intermittent. I can recall many instances of malignant yellow fever, and of the malignant typhus which formerly prevailed as an epidemic in our Alms-house, presenting symptoms approaching very closely to those characteristic of this period of cholera. So strongly was I struck with this resemblance when I saw for the first time this disease on entering the cholera shed in Montreal, that I exclaimed to my associates—this is the typhus of our Irish emigrants in the Alms-house.

In yellow fever I have repeatedly witnessed the patient in possession of his senses, pulseless, the entire surface cold, and bathed in cold perspiration; the hands and feet shrivelled and sodden; the stomach highly irritable, vomiting frequent, and dejections copious. The discharges are, however, entirely different. In cholera the serous and watery fluids are effused and discharged; in yellow fever it is the colouring matter and globules of the blood, forming the black vomit and dark melœnic stools. The result is the same—prostration and exhaustion of the circulating forces, absence of pulse, and failure of the vital functions, attended with nearly similar symptoms.

The phenomena attending on this period, from their extraordinary character, and the rapidity with which they are induced, have almost exclusively fixed the attention of observers. In the early accounts of cholera, they were taken as the type of the disease; the first periods were unheeded and unnoticed. At this time a distinction is made by many writers between them—the term cholera being exclusively appropriated to the last periods, and cholerine or choleroid to the first. The difference is, however, only that which exists between a simple remittent fever, and one that is fatal; or between any disease in its inception, and the period of moribund exhaustion.

The symptoms of the fourth period are the mere aggravation of those that immediately precede it; or are the result in the prostration of the powers of life, and the exhaustion of the vital functions, necessarily produced by their persistance.

The evacuations continue upwards and downwards, often with unabated violence. The discharges from the bowels are frequently involuntary, the fluid either running from them in a stream, or escaping in spurts every few minutes. In a small number they cease entirely, and are suppressed several hours previous to death; but in most instances they are excessive until the period of dissolution, especially the intestinal discharge.

The circulation, both general and organic, has nearly ceased. Every where the pulses have disappeared; even the carotids no longer beat. The ear applied over the heart can distinguish only a feeble sound of its contractions; the blood pressed from the superficial veins returns with a creeping and sluggish movement. The organic circulation is almost extinct. If the under lip be turned down, its interior is found dark, livid, its small vessels injected, and if pressure be made with the finger, not a globule of blood is forced from the tissue—the blood is stagnant—the colour remains unchanged. This symptom I found invariably to be a fatal sign. While the organic circulation persists a possibility of recovery remains, but when it has terminated the power of recovery is destroyed. The stagnancy of the circulation in the labial mucous membrane is probably indicative of its condition in all the internal mucous surfaces, and in the pulmonary bronchial membrane must interrupt the function of respiration. The bronchial mucous membrane ceasing to transmit the blood, it must accumulate in the right side of the heart, and impede the whole venous circulation. In a case in which cerebral congestion existed, this mode of arrest in the circulation appeared very evident. The temporal artery was excessively distended, but did not pulsate. I prevented the flow of blood from the trunk by pressure, and then emptied the ramifications by forcing the blood from them, but it immediately returned back from its capillary extremities. The circulation of the skin is in the same stagnant condition; hence its colour, varying from red-brown to indigo-blue and plumbaginous-black. In Montreal cholera shed, and the Park hospital, New York, I saw patients who had the appearance of coalmen, or blacksmiths working in their smithery. I inquired of the first one I saw having this semblance, whether he was not a smith. In this city I did not witness a similar case. Our worst were, however, amongst blacks, in whom this character could not of course be discovered.

The blood drawn from the vessels in this stage is found to be thick, of a syrupy consistence, and is black, even in the arteries—hematosis, or production of arterial blood, the sanguine nutritive fluid, indispensable to vital activity, no longer proceeds, which becomes a new cause of death. The globules examined with the microscope were found to be perfect.

The animal temperature, always the best standard or measure of the force of vital activity and energy of the organic circulation, corresponded in its depression with the sinking state of the vital movements. The thermometer in the mouth indicated 90°, 91°, and 92° of temperature; in some instances as low as 84°.

The respiration did not present a constant character. In many cases it was feeble, slow, and often scarcely perceptible. In other cases it was hurried, laboured, and oppressed. Precordial distress, and a suffocative feeling, were very common.

The nervous phenomena differed but very slightly from those of the third period. The intellectual and moral faculties were dull and sluggish. The mind manifested a total want of activity—an extreme degree of feebleness, but seldom decided delirium or great irregularity. The moral being was, as it were, annihilated. The moral sentiments were extinct; no emotions even in circumstances of the utmost distress could be excited. "The movements of the spirits were dull as night, and the affections dark as Erebus." The senses were generally torpid; hearing was most affected; the patients complaining of a peculiar sensation in the ears. Patients would often continue in possession of their senses until within a few moments of their decease. Others would be in a half torpid state, from which they could, with difficulty, be roused; while others fell into a sleep, in which they sunk into the arms of death. As respects cramps of the muscles, in some they disappeared, while in others they continued not only until death, but even after the patient had ceased to breathe, for a considerable period, the muscles were spasmodically moved.

The following cases are exemplifications of this period of the disease.

CASE XXII. *Complete collapse; skin cold, inelastic; no pulse; cramps; vomiting; purging; profuse cold sweat; death.*

August 3d.—Isaac Maxwell, a black, aged forty-six years, was admitted into hospital, No. 5, at 9 o'clock, A. M. Habits of extreme intemperance. Seized last night with vomiting, purging, and cramps. Had been unwell some days. On admission, in confirmed collapse. Surface cold, and bathed in cold sweat; temperature of the mouth 84°; temperature of the atmosphere 78°; hands have sodden appearance; skin inelastic; circulation of lips and gums scarcely perceptible; pulse imperceptible at wrists; sound of the heart's action barely to be distinguished; frequent cramps and spasms, with vomiting and purging; voice feeble.

The treatment directed was sinapisms to epigastrium and extremities; frictions with terebinthinate decoction of cantharides, followed by application of dry heat; acetat. opii, gtt. xxx. was administered; brandy-toddy was given with aquæ ammoniæ, gtt. ii. every fifteen or twenty minutes.

11 *o'clock, A. M.* The spasms and cramps very soon abated, and have not returned. Lower extremities are warmer. Æther chloric, ʒss.; dry cups to the epigastrium. Treatment continued.

1 *o'clock, P. M.* Skin warmer; cold sweat has diminished; voice stronger; feelings are more comfortable. Has camphorated gum water for drink.

3 *o'clock, P. M.* Skin has become quite cold, and covered with copious cold sweat; the bed-clothes drenched with moisture; purges, but does not vomit. Warm applications renewed; frictions made with flesh-brush sprinkled over with equal parts of Cayenne pepper and powdered alum; æther sulphuric, ʒi.

5 o'clock, P. M. Skin universally cold, and bathed in cold sweat; pulse not perceptible at wrists, just distinguishable in carotids. Treatment continued without remission.

7 o'clock, P. M. Pulse returned, but feeble; has slept since six o'clock. Continue same internal stimulants, with the external revulsives.

8 *o'clock.* Continues to dose; more warmth of skin; pulse remains, though feeble; cold sweat streaming from every pore; breathing becoming laborious. External revulsives; frictions.

9 *P. M.* In profound coma; breathing stertorous; no pulse; pupils contracted; general coldness; expired at 9½, twelve hours from the time of entrance.

Observations.—Maxwell was amongst the earliest cases of collapse brought to the hospital. At this time it was the general impression, derived from the English and Scottish authorities principally, that the excessive coldness of the patient was an indication for the application of artificial heat, and was the most appropriate remedy. The habits of the patient, and the degree of exhaustion manifested, appeared to demand the reviving and animating influence of stimuli. It soon became obvious that external heat, so far from relieving the patient, really increased the collapse, by augmenting the losses he experienced from the skin—the immediate cause of exhaustion. The stimuli were equally unavailing in rousing the declining energies of the patient. In this case, after admission, the vomiting and purging were speedily arrested. The uncontrollable symptom was the profuse sweating, prostrating the powers of the circulation.

CASE XXIII. *Advanced to fourth period; complete collapse; vomiting and purging; cold surface; cramps; cold breath; no pulse; profuse cold sweat; slight reäction; coma; death.*

August 5th.—Samuel Bewley, a black, admitted to Hospital, No. 5, at 11 A. M. Habits of patient, intemperate in the use of ardent liquors. Had just been discharged from Arch street prison, where he had been confined for two months—the disease prevailing in the prison. He was attacked this morning suddenly with vomiting and purging. On admission, was in state of collapse; pulse scarcely perceptible at wrist; surface cold, shrivelled, and bathed in cold moisture; tongue whitish, moist, and cold; was seized after admission with cramps in hands and feet.

Sinapisms were applied to epigastrium, legs and arms; frictions made with terebinthinate decoction of cantharides; camphorated effervescing draught, with acetat. opii, gtt. v. in each dose; an enema of mucilage, with acetat. opii, gtt. xx.; dry heat. The incessant vomiting and purging were allayed.

1 *o'clock, P. M.* Cramps continue in legs. Enema of aqua camphorata, with acetat. opii, gtt. xx.; pulse and skin the same. The extremities and body rubbed with the following irritating liniment—Mustard, ℥ii.; Cayenne, ℥i.; camphor, ℥ii.; ungt. merc. ℔ss.; and of the following solution, ℥ss. given every fifteen minutes—Aquæ camphoratæ, Oj.; bi-carb. sodæ, ʒiv.

1½ *o'clock.* Frequent cramps; vomiting and purging of clear watery fluid; surface cold; pulse very feeble, 94 in minute; no sign of reaction. Acetat. opii, gtt. xxx.; enema, aq. camph. Oj.; acetat. opii, gtt. xl.

3 *o'clock.* Vomiting, purging, and cramps have ceased; disposed to sleep. Frictions have been continued without cessation for last hour and half; complains greatly of the warm applications; cutaneous surface and pulse remain the same. Five cups to the abdomen, and as many to the spine—very little blood could be obtained; the capillary circulation appeared to be nearly extinct; the abdomen, chest and extremities were covered with sinapisms; same internal treatment.

4 *o'clock.* Surface is warmer, has become dry; pulse rising, has more volume and force; complains greatly of thirst; keeps small pieces of ice in his mouth, and takes his drinks cooled with ice.

5 *o'clock.* Refuses every thing but iced drinks; complains that his ears are stopped up, and his sight is dim; very restless; breath and tongue are warmer. Sinapism reäpplied to abdomen.

10 *o'clock, P. M.* The reäction has given way; surface again cold, and covered with clammy sweat; skin inelastic and shrivelled; vesication in different parts of the body and extremities.

6*th*, 1 *o'clock, A. M.* Collapse advancing. Following prescription—Spt. ammoniæ, æther sulph. āā. ʒii.; acetat. opii, ʒss.; aquæ puræ, ℥vii.—℥ss. every two hours.

8 *o'clock, A. M.* Efforts at reäction; skin warmer.

11 *o'clock, A. M.* Skin warm; pulse at wrist, though feeble; has been since 8 o'clock with tendency to coma; not easily roused; answers with difficulty; some incoherence; skin vesicated. Cups applied to back of neck; bled freely, ℥x. obtained; head was relieved.

2 *o'clock, P. M.* Sinking; no pulse at wrist; in complete stupor; respiration irregular, with long intervals. Stimulants freely exhibited without effect. Died at 4½ o'clock, P. M.

Observations.—When cholera broke out in the Arch street prison, with the fatal violence that characterized it in that establishment on the 5th of August, as many of the prisoners confined there as it was possible were discharged. Amongst those dismissed was Bewley, who was immediately attacked by the epidemic. Nearly all those who took the disease on the 4th and 5th in the Arch street prison perished with it.

This case exhibited the symptoms in their most malignant aspect. The economy made an effort at reäction, but did not possess sufficient energy to render it effective or diffused. The patient did not succumb under the exhaustion of profuse losses, which were arrested, but from the brain, a profound comatose state being induced.

Case XXIV. *Fourth period; complete collapse; previous diarrhœa; no pulse; algid; profuse sweat; vomiting and purging; cramps; cerebral reäction; coma; apoplectic state; death.*

August 6th.—Matilda Williams, aged twenty-four years, a white woman, of dissolute life and intemperate habits, just discharged from Arch street prison, was brought to hospital, No. 5, at 7 o'clock, A. M. She had been affected with diarrhœa for ten days. This morning before day began to vomit and purge; was seized with cramps. On admission, the surface universally cold; extremities livid, shrivelled; skin inelastic, covered with cold, profuse sweat; no pulse at wrist; temperature of tongue 89°; respiration not affected; discharges from stomach and bowels a thin, watery, and nearly clear fluid.

Sinapisms were applied to epigastrium, legs and arms; frictions made with Cayenne, infused in hot brandy; ℥i. camphorated solution of soda, with acetat. opii, gtt. xl.; enema of camphorated water with acetat. opii.

11 *o'clock.* Slight reäction; says she is more comfortable; pulse perceptible at wrists; surface of body cold and moist; cramps occasionally, but mitigated in force; complains bitterly of the sinapisms on her legs, which have been removed; thirst intense. Iced gum water for drink.

2 *o'clock, P. M.* No improvement; cold, drenched with sweat; livid; cramps in legs. Acetat. opii has been given in camphorated water, and saline solutions. Ordered hot brandy-toddy; spt. ammoniæ, æther sulphuric, āā. ʒi.; mucilage, ℥vi.—℥ss. every two hours.

5 *o'clock, P. M.* No change; body and extremities enveloped in flannel steeped in spt. camphor; continue stimulants; two enemas of saline solution have been given and were retained.

8 *o'clock, P. M.* Patient sinking; respiration irregular, at long intervals; no pulse; insensible; swallows with difficulty.

11 *o'clock, P. M.* Profound coma; stertorous breathing; surface quite hot; eyes injected and rolled upwards; carotids pulsate with great force; moans. Blood was drawn from the head by cups, and ice applied, with dry heat to extremities. Died at half past twelve.

Observations.—The case of Williams was of aggravated character, and hopeless from the period of her admission. The circumstance in this case worthy of notice, is the sudden production of a strong reaction directed chiefly to the brain, inducing a complete apoplexy.

CASE XXV. *Fourth period; previous diarrhœa, which had ceased; cramps; universal coldness; profuse sweat; death in six hours from admission.*

August 9th.—Letitia Parker, aged fifty-five, black woman, of intemperate habits, was admitted in Hospital, No. 5, at 7½ o'clock, P. M. She had been suffering from diarrhœa for the last three or four weeks; no vomiting. On admission stomach and bowels were quiet; pulse very feeble; body universally cold, and bathed in moisture; temperature of tongue, 90°; cramps of the extremities; no thirst; no pain in abdomen or sensitiveness to pressure; abdomen cold.

Stimulants were freely administered, both internal and external, without effect. She continued to sink, complaining of no particular uneasiness, without discharges from the stomach or bowels; perfectly passive and indifferent to every thing around her. Died at 1 o'clock, A. M. six hours from admission.

Observations.—The long-continued diarrhœa under which Parker had laboured, had exhausted her forces, which were still more reduced by the profuseness of the cutaneous exhalation. In this case is presented an instance of the entire cessation of the discharges from the alimentary canal for some hours previous to death. Had not inquiries been instituted, it might have been supposed that collapse had taken place without any losses of the fluids having been experienced.

CASE XXVI. *Fourth period; excessive intemperance; profuse evacuations; rapid collapse; exhaustion and death.*

August 9th.—James Bethe, aged thirty-two years, a native of Scotland, a strong, muscular man, sanguine nervous temperament, a weaver, of intemperate habits, and had been for the last week on a drinking frolic, during which he was repeatedly drunk, was admitted into the hospital at 11 o'clock, P. M. He was reported as having been seized two hours before admission with vomiting and purging of a thin watery fluid, and a severe pain in the epigastrium. On his entrance his pulse was nearly natural, and skin in good condition. His thirst was excessive, and the most copious discharges were poured forth from his stomach and bowels; the fluid nearly as colourless as spring water. Sinapisms were applied, opium administered; six ounces of blood were drawn by cups applied to the epigastrium; extremities rubbed with hot spirit of camphor, and enveloped with flannel steeped in the same; dry heat to the feet; takes ice water, and holds pieces of ice in his mouth.

12 *o'clock.* One hour from admission—evacuations upwards and downwards incessant and most copious; prostration and collapse complete; surface cold and moist; fingers and feet blue and shrivelled; elasticity of the skin lost; pulse indistinct; frequent cramps. Tinct. thebaic, gtt. lxx. in camphorated effervescing draught given; opiate injection; solution of soda in mineral water; frictions and sinapisms continued.

1 *o'clock, A. M.* No change; restless.

4 *o'clock, A. M.* Jactitation and anxiety great; evacuations continue; thirst, and desire for cold drinks intense; countenance anxious and livid; eyes deep sunk in their sockets; skin cold and livid; pulse barely perceptible; circulation in the interior of the lips has ceased; breath cold; nothing remains on the stomach. Hot toddy; injections of starch and laudanum, gtt. 100.

9 *A. M.* No amendment; incessant cry for cold drinks. Frictions have been continued; sinapisms applied and reäpplied; various internal diffusible stimuli; but the stomach has continued to discharge profusely a thin, clear, watery fluid—two large buckets have been filled, and a third is now half full of the fluid received from the stomach; much has also been evacuated on the floor. A strong decoction of capsicum was tried, but without effect. A saturated solution of common salt was administered with the effect of checking the vomiting. Calomel, gr. xl. were given, and in fifteen minutes gr. xx. more.

12 *M.* Patient in hopeless state; no pulse; capillary circulation stagnant; universal coldness. Expired at 12½.

Remarks.—The rapid progress of this case, and the violence of the symptoms, are unquestionably to be ascribed to the brutal intemperance of this individual. In the week of his attack he had been repeatedly drunk, and during that time had subsisted almost exclusively on whiskey. The quantity of fluid evacuated was greater than I have ever witnessed in any subject of disease. While in the hospital he filled three of the largest size water-pails with the fluid ejected from the stomach alone, independent of what was discharged before admission, or that passed from the bowels.

Case XXVII. *Fourth period; intemperate habits; diarrhœa and vomiting twenty-four hours; profuse purging; rapid collapse; death.*

August 10*th*.—George Nedile, a black, hod carrier, was admitted into hospital at 4 o'clock, A. M. Has habits of intemperance. For last twenty-four hours has been frequently vomiting, and had diarrhœa. These symptoms augmented in the night; cramps came on, and the patient finding himself so much worse, got up and walked to the hospital.

On admission he had cold surface bedewed with cold, clammy sweat; pulse nearly extinct; vomiting not so urgent, but purging incessant; breath and tongue cold; inside of lips and gums livid, and the circulation there stagnant; skin of hands and feet shrivelled and inelastic; violent cramps of upper and lower extremities, and of abdominal muscles.

Frictions were made; sinapisms applied; hot toddy, and opium administered; dry heat; enemas with laudanum.

No effect resulted from the remedies; the purging continued excessive; and the patient died at 8 o'clock, A. M. four hours from admission.

Remarks.—The stagnant state of the capillary circulation in the interior of the lips, I have always found a fatal sign. So long as the circulation there has some energy, that the blood can be forced from the tissue by pressure with the finger, forming a white spot, and returns again with moderate freedom, there remains a prospect of recovery. But when the blood is stagnant in this tissue, and ceases to circulate, it is probable, the same condition prevails extensively, even to the bronchial mucous membrane, and consequently the respiratory process, as it regards the changes in the blood, is more or less suspended. The purging in this individual was most excessive.

Case XXVIII. *Cholera of first period; cured; relapse; rapid passage to the fourth period; preceded with loss of voice and faintness; death in six hours from attack.*

August 11*th*.—Was requested to visit Mrs. F. This lady was seventy-eight years of age, and exhibited the effects of time on the constitution. She had almost entirely lost her hearing, her hair was perfectly white, and skin furrowed with wrinkles. During last night she had been attacked with purging, and acute pains in the bowels. The purging continuing, I was sent for this morning. The pulse was feeble, and skin cool; the stools were thin and watery. A sinapism was applied to the stomach; an enema of flaxseed and laudanum was administered, and the following pills directed:—℞. Mass. hydrargyri, gr. viii.; ipecac., opii, āā. gr. iv. Divid. in pill. iv. A pill to be given every two hours. The purging was arrested very speedily, but the stomach became affected at 2 P. M. and she vomited several times. The pills were discontinued; the effervescing draught administered; a sinapism applied to epigastrium. In the evening the symptoms had disappeared.

12*th.* Had passed tranquil night; stomach and bowels no longer disturbed.

14*th.* Mrs. F. had remained without the slightest apparent effect from the former attack. She had been going about as usual during yesterday and this morning, and her family had remarked that she appeared uncommonly well. Last night being warm, she had complained of having perspired very freely. At 11 o'clock, A. M. while engaged in her ordinary pursuits, her voice suddenly failed, and she became faint. She was conveyed to bed, and a messenger despatched for me. Being from home, Dr. S. residing in the neighbourhood, was desired to visit her. He found nothing to excite alarm, except the feebleness of the voice, reduced to a whisper. No evacuations had taken place; the faintness had left her after lying down. Dr. S. finding no symptom requiring attention, quieted the fears of the family, and merely directed the patient to be kept at rest. He had not been gone more than half an hour when excessive evacuations occurred from the bowels, attended with copious vomiting. I arrived between one and two, when complete collapse was already established. The discharges had been of a fluid, scarcely turbid, with some few flocculi. The surface was cold; pulse had ceased; the hands and feet were shrivelled and blue; the skin inelastic; the voice almost inaudible; cramps of the lower extremities frequent and severe; thirst ardent. Frictions, sinapisms, and various external revellents were brought into action; opiate enemas; diffusible stimuli; saline solutions with camphorated water were exhibited.

At 3 P. M. the evacuations had entirely ceased; the pulse acquired some energy; the skin became dry, and the temperature improved, a faint effort at reäction was established. This apparent amendment soon gave way, and death took place between five and six o'clock, about six hours from the attack.

Observations.—This case is remarkable by the peculiarity of the invasion of the disease in the relapse, or the second attack. Loss of the voice and a disposition to fainting preceded the evacuations. These did not commence until an hour after the former symptoms. Dr. S. a very respectable practitioner, saw nothing to induce him to suppose the patient was threatened with cholera; yet in a short period after he had left her, the symptoms set in with great violence. Is not the sudden prostration of the strength in this case, without any losses having been sustained by evacuations, to be attributed to the determination of the blood to the alimentary mucous surface, the consequence of irritation, and the immediate precursor of the discharges? From a movement of this kind, exhaustion of the forces of other organs must be induced. In an aged person, the quantity of whose fluids is always diminished, debility and exhaustion of vital activity by the abstraction of the circulating vital fluid is induced, either by moderate evacuations, or congestions of no great intensity or extent.

Case XXIX. *Cholera, fourth period; preceded with vomiting, diarrhœa and cramps; seven months pregnant; sense of suffocation; great distress; universal coldness; total absence of pulse; livid skin, cessation of discharges; reäction; abortion; recovery.*

July 28th.—Mary Queen, aged thirty years, an Irish woman, employed in reeling, was admitted at 9 o'clock, A. M. into Hospital No. 5. Vomiting and purging had existed between two and three days. Feeling exhausted, she left her employer, to go to her usual residence last evening. Before she reached the house, violent abdominal spasms came on, with cramps in the limbs. The inmates alarmed in regard of cholera, refused her admission, and she was compelled to remain in the yard during the night, lying on the ground. In the morning her situation was represented to me by some of the neighbours, when I had her brought to the hospital.

On admission the following symptoms existed:—The surface of the body was universally cold, yet she loudly complained of the heat; the breath and tongue were cold, the last coated with fur; no pulse could be distinguished at the wrists or elbows. The colour of the skin was of purple red, similar to that of the unripe damson plumb. This colour was most intense on the hands, forearm and feet—on the face it was dusky. The countenance was haggard, and expressive of great oppression. Respiration laboured, irregular; she insisted on it that she was suffocating, and constantly demanded to be taken into the open air. The chest yielded to percussion a clear resonance, and the respiratory murmur was distinct and clear in every part of the chest. The voice was altered, like that of a person labouring under severe cold; at times hoarse, suddenly becoming a whisper;

thirst was excessive. Soon after admission she vomited a clear watery fluid, and the stomach appeared very irritable. This was the first case of cholera admitted into the hospital under my charge, and from the existing symptoms, stimulants appeared the remedies indicated for the production of reäction, excitement of the circulation, and its diffusion. The patient, however, manifested an instinctive abhorrence of them. A number were tried, but were rejected by her the moment they were placed in her mouth; she declared they would sicken her stomach and make her vomit. Brandy, wine, spt. ammoniæ and others, were in succession attempted to be forced on her. Her resistance could not be overcome. Her incessant demand was for cold drinks.

The external application of heat, particularly by vapour, was at this time highly recommended, and much in vogue. This patient protested vehemently against all warm applications—heat will murder me, was her constant exclamation—give me cold—cold. Nature is an instructor whose lessons are to be preferred to scholastic authorities, and the instinctive sensations of the organs are her language. The effervescing draught iced, and iced water were instituted, for the stimulants. They were taken with avidity and delight, and largely demanded. The dose repeated every fifteen or twenty minutes; the abdomen was covered with a sinapism; same application to the extremities.

12 *o'clock.* Skin continues cold; no pulse to be felt; restlessness increased; sense of suffocation most distressing; the vomiting and purging are arrested. The whole surface rubbed with terebinthinate decoction of cantharides. At 1 o'clock the extremities were enveloped in plasters composed of camphor, capsicum, mustard and mercurial ointment.

5 *o'clock, P. M.* Stomach and bowels have remained quiet; is more composed; skin has acquired some warmth; a feeble pulse at the wrist; respiration is freer, and the voice more natural; continue treatment.

8 *o'clock, P. M.* Reäction decided; skin warm and soft; pulse has considerable volume and force; respiration large and regular; takes iced gum water; stomach and bowels continue quiescent.

11 *o'clock.* Progressive improvement; febrile action; cool mucilage of flaxseed administered as an enema.

29*th,* 3 *o'clock, A. M.* Got up to close stool, and passed without pain a dead fœtus, the colour of which was nearly black; the delivery was attended with very little loss of blood; reäction soon after flagged, and a tendency to collapse was manifested. Frictions were instituted; dry warmth applied to the feet, and acetat. opii administered.

12 *M.* Reäction again established; skin warm; pulse full and firm. Although no discharge took place at the time of delivery, the loss of blood is now profuse.

8 *P. M.* Patient convalescent; uterine hæmorrhage has ceased.

This patient continued to amend, and was discharged August 6th. Four days after her recovery, the skin of the abdomen and of portions of the extremities to which the sinapisms had been applied, but which previously had produced no effect, inflamed and vesicated. They were very sore. The detached cuticle retained the discoloration of the state of collapse, and displayed a striking contrast with the clear white of the now healthy surface.

Observations.—This patient manifested the symptoms existing in the commencement of the fourth period. Its further progress was arrested by the cessation of the evacuations. She suffered no losses by the skin, which, though cold, remained dry, and this was an additional circumstance, that preserved her from the last stage of collapse. May not her exposure from lying on the pavement of the yard throughout the night, at the commencement of the last periods, have possessed an agency in preventing the excessive perspiration, or rather cutaneous leakage, and have preserved her from the exhaustion consequent upon it? Until this case, the patients received into the various hospitals, had been treated with steam baths or heated vapour. I had assisted my associates charged with the care of those establishments, and it was the general impression, that this means hastened the extreme collapse by the profuse discharges it caused. None of the patients survived over a few hours. This case made a strong impression on my mind, and gave a new direction to the treatment I pursued.

Case XXX. *Advanced collapse; previous debility from low diet, fatigue, and want of rest; cold surface; shrivelled skin; blue colour; no pulse; cramps; dejections; cessation of cutaneous transpiration and purging; reäction; recovery.*

I was requested by Dr. Beattie to visit with him a patient, J. S. on Friday, August 24th, who had been attacked that morning with cholera. He was an Irishman, aged twenty years, of sanguine-nervous temperament, and employed in a wholesale store in Market street—his constitution vigorous. With a view to guard against the disease, and misunderstanding the general directions in respect to diet, published by the public authorities, the family had lived for the last three or four weeks on a most abstemious diet. It consisted of bread and tea with a little chipped beef, for each meal. For a few days immediately preceding the attack, he had been subjected to considerable moral excitement, suffered from loss of rest and great fatigue. The Monday previous, his mother had become a victim to the epidemic, after a few hours illness, and on whom he had faithfully attended. Immediately upon her decease, he started to the country, to bring his sister to town, that she might attend the funeral. The gig broke down on their return, and he was compelled to drag it the distance of a mile in the heat of the day to have it repaired. As soon as the funeral was over, he again took his sister to her residence in the country, and returned during the night to his house. He thus passed forty-eight hours without sleep, in constant exertion, and under considerable moral agitation. On Wednesday he laid by, and feeling unwell, he took on Thursday a saline purge. The medicine operated freely, and on Friday morning, while at the store, he was suddenly seized with vomiting, purging, spasms in the abdomen, and cramps in the legs. Dr. MEIGS passing at the time, was requested to administer his aid. A large sinapism was applied to the abdomen, and the doctor conveyed the patient home in his gig. Dr. Beattie being the family physician, was sent for, and assumed the management of the case. A combination of calomel, camphor, and opium was given, the patient wrapped in blankets, and warmth applied. At 1 o'clock I saw the patient in conjunction with Dr. B. He then presented the following symptoms:—The surface was universally cold, with profuse cold perspiration; the hands shrivelled; the nails purple; the fingers and toes indigo-blue. The pulse was feeble; the circulation on the interior of the lips very languid; the breath and tongue cold; the voice reduced to a whisper; the muscles of the extremities affected with cramps; dejections frequent, discharges a thin, watery, brown-coloured fluid, containing numerous whitish flocculi.

The same treatment was continued, with the addition of frictions made every half hour with an irritating liniment, composed of camphor, Cayenne pepper, mustard, muriatic acid and lard. Immediately after the liniment had been well rubbed on, frictions were made with warm, powdered chalk; dry cups were applied to the abdomen and down the spine.

5 *o'clock, P. M.* The patient much prostrated; coldness of surface increased; a pellucid fluid issuing from every pore; his shirt soaked with perspiration; pulse imperceptible; legs and hands indigo-blue; cramps frequent; labial circulation nearly extinct; the prostration complete; questions annoy him, and he answers with reluctance;

perfect apathy; the warm applications are oppressive to him; dejections not as frequent; no vomiting; thirst intense.

The application of warmth was discontinued, the blankets removed, his wet shirt taken off, and the windows of the room thrown open; pounded ice was given in small quantities, solution of carbon. soda iced was given every few minutes, and frictions continued as before; calomel, camphor, and opium omitted.

10 *P. M.* Patient in same state; surface is dry, though cold; the transpiration has ceased; dejections very small and less frequent. It was thought he could not possibly survive through the night; cold saline drink; ice and frictions persisted in.

Saturday, *25th*, 8 *o'clock*, *A. M.* Patient alive, though barely animated; no pulse; universally cold; breath cold; voice nearly extinct; labial circulation continues, though very feeble; and the blood pressed from the veins slowly fills them again. *During the night the dejections have been few and small, and the transpiration has entirely ceased.* There have been no additional losses to exhaust the patient further.

Reflecting on the condition of this patient, the vital movements nearly extinct, the circulation almost at a stand, the vital forces reduced to the lowest ebb, we were struck with its resemblance to that which ensues from an exposure to a low temperature. Though the causes are different, yet the condition is very analogous in the two cases. In this state heat and powerful stimulants extinguish, and do not reänimate the vital movements, or if they be roused, it is only a momentary effort, terminating speedily in irremediable exhaustion. We were further struck with another analogy. The choleric patient advanced to the condition of the case before us, with his blood but partially oxygenated, is reduced in the scale of vitality, and approaches in the state and nature of his vital forces to the animals of cold blood, or having a single ventricle. In all such animals, a degree of heat equal to that of the human body is oppressive, benumbing, gives a strong tendency to asphyxia; while a degree of temperature, which is often that developed by fever in the human organism, is productive of fatal asphyxia in the space of a few moments. In those animals also, when placed in mediums destitute of oxygen, if the temperature be elevated, asphyxia is rapidly induced. The same animals in a low temperature, approaching to the freezing point, will survive a very considerable period, and may be reänimated after a much longer suspension of their vital functions.

Acting on these suggestions, I took a piece of ice, and rubbed with it a hand and arm for a minute or two, following it up with dry frictions, first with my hand, and then with a coarse cloth. An instant change took place in the colour of the skin. From a cerulean hue, it became pink, and the sensation of cold was most agreeable to the patient. Encouraged by this experiment, the same process was extended to the whole body, and repeated every half hour. The temperature of the body very soon improved; it acquired an agreeable warmth, and the skin felt dry and more natural. The treatment with ice internally administered, and the iced saline solution given in small quantities every few minutes, was persisted in during the day.

7 P. M. Remains in the same state; a very feeble pulse at the wrist; the labial circulation improved; has occasionally dejections from the bowels, but very small. At this time it was determined to advance a step, and to bring the diffusible stimulants into action. The volatile julep was ordered, each dose containing five grains sub. carbon. ammoniæ. The decoction of rhatany was also administered to restrain the disposition to diarrhœa.

Sunday, August 26th.—Reäction had ensued during the night, moderate in degree; pulse very perceptible at wrist, though feeble; skin of pleasant temperature, and lighter colour; the lips have lost their livid hue, are of a bright red, and their circulation very active; lower extremities warmer; no nausea; dejections very small in quantity and of dark colour; voice is still a whisper; tongue and breath are warmer; circulation through the veins is yet slow. Continue the volatile julep, with the addition of cold wine whey, and dry frictions.

8 *o'clock, P. M.* Reäction had continued slowly to advance during the day; pulse is fuller; head is hotter than other parts of the body; eyes are injected; voice is stronger.

Monday, August 27th.—Cerebral determination; severe head-ache which came on during the night; has his head bound tight with bandage on account of the pain; face is flushed; head hot; eyes blood-shot; pulse has considerable force; voice more natural; tongue furred; nails are dark, but fingers have better colour; skin of fingers is still inelastic and shrivelled, that of hands more natural. Cold applications were directed to be kept to the head; the stimulants were discontinued; twenty leeches applied behind the ears; a laxative enema given, and the feet stimulated with dry heat. The enema produced bilious stools. Sago for diet.

Evening. Head relieved, and convalescence commenced.

From this time the patient, under the charge of Dr. Beattie, continued to improve, and was soon restored to health.

Observations.—I have seen no other patient recover from so prostrate and apparently hopeless condition, as the subject of this case. Much is to be attributed in the successful result to the good constitution, and to the regular and temperate habits of the patient. He had produced a state of debility by an impoverished and innutritious diet, adopted from erroneous impressions, and which was incompatible with the exertions to which he was subjected. This probably was a powerful predisponent to the attack he suffered.

The prompt effect of the ice frictions on the colour of the blood, slowly circulating or nearly stagnant in the skin, was remarkable. It was analogous to that which is caused by exposure of the blood to the air or oxygen, and it is blood possessing this colour that alone is adapted to sustain the vital actions, and for the production of the vital forces. Excitation of parts in which black blood circulates is productive of rapid disorganization, or exhaustion of vital activity and death. We have yet much to learn with respect to the influence of temperature on the blood and vital movements.

Case XXXI. *Fourth period; advanced collapse; previous diarrhœa; impoverished diet; death in nine hours from attack; dissection.*

August 15*th.*—At 7 o'clock in the evening the assistants at the hospital were requested to visit Mary Ann Williams, a coloured woman, residing in a miserable cellar in the vicinity. This woman had lived for some time in great wretchedness, and on scant and innutritious fare. She had been during the day frequently affected with purging and vomiting, but had continued at her wash-tub up to 6 o'clock this afternoon. When seen at seven she was entirely prostrated, and in a state of complete collapse. She was immediately transferred to the hospital. On admission the pulse had ceased; the labial circulation was stagnant; temperature of tongue and breath 90°; complete aphonia; complains of a sense of hunger.

An active stimulant treatment, internal and external, was adopted, and the solution of muriat of soda administered. No effect resulted from the remedies employed—she continued rapidly and steadily to sink, and died at 4 o'clock, A. M.

Examination twelve hours after death.—The lungs collapsed, destitute of blood; accumulation in bronchial vessels, of substance resembling mixture of mucus and saliva; heart natural, containing some fluid black blood.

Cavity of abdomen.—The spleen small and shrunken, no discharge of blood when cut into, presenting a shrivelled appearance. The liver natural; gall-bladder distended with bile. The stomach partially distended with fluid resembling rice water; the mucous coat softer than natural, and the whole surface covered with enlarged mucous glands, presenting the appearance of white pimples, and varying in size from a mere point, to the size of a millet seed, particularly large and accumulated in great quantities near the œsophagus, and extending from thence along the small curvature of the stomach to the pylorus. There were also on the mucous coat of the stomach pointilated injections and patches of red and mahogany-coloured spots, varying in size from mere points to an inch in diameter, particularly in the large curvature and the vicinity of the pylorus: there was also a white exudation observable near the termination of the œsophagus. The omentum was destitute of fat, and the vessels beautifully injected of a red colour; the vessels of the mesentery were also distended with blood; the mesenteric glands were enlarged, hardened, and of a brighter colour than natural, (pinkish hue.) The intestines contained a large quantity of rice water fluid; or thin glue, of a dirty-white colour, slightly tinged with green, with flocculi floating in it. The vessels of the small intestines distended with blood, presenting an arborescent appearance, imparting a violet tinge to the peritoneal coat, but by dissecting the peritoneal coat it was of a natural colour and consistence, the tinge proceeding from the enlarged vessels in the submucous cellular tissue. No excrementitious matter in large intestines; the muciferous glands much enlarged on internal surface of large intestines and lower portion of the ilium, presenting the appearance of pimples, similar to those seen in Fig. 3, Plate II.; the ducts obvious to the naked eye, with distinct black spot in the centre of the enlarged glands in the lower portion of ileüm and near ileo-cœcal valve; the other portions of the large intestines had the same pimpled appearance, but the ducts not obvious.

The cortical portion of the kidneys palid; the bladder contracted and destitute of urine, the internal surface of a light violet colour.

CASE XXXII. *Fourth period, suddenly coming on while at work; extreme collapse; pulseless; suspension of the circulation; insensible; evacuations ceased; gradual revival and temporary improvement; partial reäction and death.*

August 23*d.*—Benjamin Shaw, negro, aged sixty years, was brought into hospital at 2 o'clock, P. M. Uses spirits, but is not a drunkard. His wife died with cholera a few days since. Eat yesterday pears and cantelope; was reported to have had yesterday a natural evacuation. This morning went to the meadows in the Neck to mow; had diarrhœa with pain in bowels. While mowing was attacked with great severity, and suddenly fell; had vomiting and purging of thin clear fluid, and became insensible. In this state was brought into the hospital.

On admission the symptoms were—temperature reduced below natural standard; tongue 90° Fahr. covered with cold moisture; hands shrivelled; skin inelastic; breathing laborious, almost stertorous; insensible; pulse barely perceptible at wrist; circulation of lips arrested; labial mucous membrane livid, its follicle enlarged and projecting; cramps in arms and legs; purging; no vomiting. Sinapisms; frictions, &c.

3 *P. M.* Symptoms more unfavourable; profound coma; no pulse; one passage of rice water fluid since admission; breathing stertorous. Ten cups to epigastrium; injection of saline solution with a few drops of laudanum; frictions constantly made with irritating liniment; dry heat to feet; brandy-toddy as drink. Universal coldness.

6 *o'clock.* Coma complete; cannot be roused; breathing stertorous; cold sweat; no pulse to be distinguished.

His state appearing desperate, and expecting death would soon ensue, treatment was suspended, and he was suffered to lie exposed to the air from a window near his bed during the night.

24th, 9 *o'clock*, *A. M.* Condition of the patient ameliorated; during the night the sweating ceased, and the evacuations from the stomach and bowels have been suspended since his admission. Before morning he became quite sensible, and now answers questions; pulse is distinct at the wrist; breathing is less laboured, more natural.

Cups were applied to epigastrium, very little blood obtained; a strong sinapism was applied, and others to the back of the neck and between the shoulders; dry heat to the feet; brandy and water administered occasionally; frictions with irritating liniment; calomel, gr. i., camphor, gr. ii. every hour.

12 *o'clock*, *noon.* Patient remains the same; pulse at wrist; temporal artery distended with blood, but has no pulsation; blood in it can be pressed towards its extremities, but regurgitates, the trunk being secured by pressure; the artery being opened, no blood escaped; ℥i. obtained by applying a cup; blood dark, having no character of arterial blood; tendency to coma, but responds to questions; tongue furred, livid and cold; lips livid, no circulation in them; the bundles of fibres of the pectoral muscles in constant motion, imparting an undulatory movement to the skin, but without the tonic contraction of cramp; no discharges either from stomach, bowels, or bladder. Takes sago water and gum water for drink.

4 *o'clock*, *P. M.* Complains of excessive heat, will not be covered;

throws the covering from him; sinapisms, blisters, nor the frictions have affected the skin; tendency to coma, but can be roused without difficulty, and answers correctly.

6 *o'clock, P. M.* Chest and abdomen have become hot; no evacuations; drinks wine and water; complains of pain in abdomen. Cups applied to the epigastrium, which drew three ounces of blood—it was less viscid and less of tarry consistency than any previously obtained; cups were also applied to the back, and while on the patient made an effort to urinate; some urine he said passed from him; continues diluting drinks, and pills.

10 *o'clock, P. M.* Is much worse; respiration laborious; constant jactitation; great distress; complains severely of the pain and uneasiness in his abdomen. At 12, night, had a discharge from his bowels, and soon after expired.

Dissection. Body examined ten hours after death.—Form athletic; muscles well developed, firm and contracted in limbs; very little adipose substance.

The chest being opened, the lungs collapsed—cut into very little blood escaped from them; ancient adhesions of pleura on right side near the diaphragm; bronchial mucous membrane red and congested with blood, greatest near the bifurcation. The heart of large size, firm; both ventricles contained blood, and the right a polypus concretion.

In the abdomen, the liver presented its more usual colour, a firmness little less than is common, not much blood in its vessels; the gall-bladder distended with bile of natural aspect. The spleen small and shrunken, contained no blood. Omentum without fat—its veins distended. Stomach nearly empty; red patches scattered throughout its internal surface; consistency of mucous membrane natural, not easily torn, thick near the pylorus. The duodenum contained a fluid resembling the arrow-root gruel he had taken; its consistency and appearance not different from its normal mode. The mucous membrane of small intestines for more than half their length deeply injected with blood, and of a port-wine red, containing in them a bloody mucus—the membrane consistent. The vessels distended with coagulated blood. The disseminated follicles or glands of Brunner enlarged. The caput coli more deeply injected, so as to be nearly black; the disseminated follicles also enlarged. In the whole length of the colon the mucous membrane exhibited the same appearance. The membrane was elevated into ridges, forming a resemblance to valvulæ conniventes. At a first glance it might have been supposed to be completely sphacelated, but on examination the consistency of the membrane was perfect, and the black hue was found to arise from blood effused in the sub-mucous cellular tissue, as it is usually termed by anatomists, but which is properly the derma of the internal dermoid tissue. By dividing the mucous membrane, the coagula of blood could be turned out in solid masses. This phenomenon is the result of interstitial hæmorrhage, and bears the strongest analogy to apoplexy. The pancreas was dry, granulated, and hard. The kidneys firm, and of natural colour; bladder contracted and empty. The blood in arteries and veins similar. Femoral artery diseased, ossified in patches.

The head was not opened.

Observations.—The first periods of the disease, as is usual in his class of individuals, was unattended to by Shaw, and he proceeded to work in the meadows below the city, affected with purging and occasional vomiting. While engaged in the labour of mowing in the hot sun, in this state, he suddenly became exhausted, fell, and passed rapidly into extreme collapse. In this condition he was brought to the hospital. The coma which came on with the collapse is a remarkable feature in this case. It must be attributed as a peculiarity attached to this individual case rather than as belonging to the disease itself. Was it not an accident arising from working in a laborious employment exposed to the sun in his debilitated condition? It is equally remarkable that the coma, after persisting for some hours, disappeared after the cessation of all the evacuations, by the simple recuperative powers of the economy. The phenomenon exhibited by the colic mucous membrane is not peculiar, I met with it in others. The first case was a patient who died in the cholera shed of Montreal, examined by Dr. Harlan and myself. The colon was perfectly black, and the mucous membrane raised into considerable elevations by the effused blood, coagula of which we removed by cutting through the tissue. It occurred in another case in my hospital. In that patient the disease ran on into the typhoid state. The mucous membrane of the colon was black from the blood effused and coagulated in its structure, and from the period he survived, time sufficient had elapsed for the production of extensive ulcerations destroying the tissue.

The appearance of the intestines is represented in Plate II. Fig. 1 is a section of the colon. Fig. 2 a section of the cœcum: and Fig. 3, of the ileum. The plate does not give a perfect representation of the colour. In the natural state the colour was of a deeper black; by the action of the hot press, a brown hue has been imparted, and Fig. 3 has acquired rather too greenish a tint.

Case XXXIII. *Fourth period; intemperate habits; neglected diarrhœa; collapse complete; no reäction; death in thirty-one hours from attack; dissection.*

September 13*th.*—Was requested to see, in consultation, J. B. a bricklayer, aged sixty years; has for some years abused the use of ardent liquors; corpulent body; has enjoyed general good health; subject to occasional diarrhœa succeeding to a debauch. For last two days bowels have been disordered, but was attributed to usual cause, and not attended to; eat melons yesterday; last night about twelve was attacked with vomiting, purging, and cramps. Early this morning sent for Dr. M. who took from the arm ℥xv. of blood, and gave salt water emetic and ipecacuanha. He was vomited very freely and copiously by the remedies. The pulse rose, and ℥xv. more blood were drawn; cups applied to the abdomen, and calomel administered. Soon after collapse became complete. I saw him at 3 P. M.; at this time pulse was scarcely perceptible; labial circulation arrested; the body was universally cold, and cold sweat issuing from every pore; tongue cold, furred, and moist; purging frequent, and stools resembling thin gruel; cramps of lower extremities; colour of skin livid; voice feeble; respiration laboured; great precordial distress; sense of extreme debility; thirst incessant; has not vomited since morning. He has taken calomel ʒi., and had injections of acetat. plumbi, gr. xx. with tinct. thebaic.

Frictions were made with an irritating liniment rubbed on with brushes; the calomel continued, and iced saline solution given every few minutes—the last very grateful to the patient; dry heat to the feet; a flannel moistened with aq. ammonia and ol. terebinth. was placed along the spine, and a heated iron passed over it—the skin was instantly inflamed and vesicated. In the course of an hour, no change being induced, the lower and upper extremities were rubbed with ice for a few moments, to which immediately succeeded dry frictions. The colour was changed instantly from a livid to red. In the evening the skin had become dry, the transpiration having ceased, and was warmer; the purging continued without check; the patient gradually sunk, and died early in the morning.

Post mortem examination. Body examined five hours after death.—Muscular; robust body; abdomen swelled and resonant. Thick layer of adeps beneath the skin.

Lungs collapsed when thorax was opened; structure perfectly natural; empty of blood. Heart, right auricle and ventricle distended with blood; no concretions; consistence good; pleura natural; drier than is common. Large quantity of adipose matter around the heart and in mediastinum.

The intestines externally of deep red, becoming bright scarlet on exposure to air. Peritoneum covering the small intestines red from inflammation, which is deepest where the convolutions are in contact. When the convolutions are separated, numerous filaments resembling cobwebs are formed by a glutinous adhesive matter which is effused on their surface. Numerous fine vessels injected seen through the peritoneum. Fig. 1, Plate II. represents a section of the small intestines, which throughout exhibited the same appearance.

The stomach distended; contained thin, watery fluid in small quantity. The mucous membrane of cardiac extremity of deep red; in great curvature patches of intense red, caused by infiltration of blood into the tissue; stellated patches in pyloric extremity; at this end the membrane appears unusually thick; firm consistency; follicles not apparent. Duodenum light pink colour. Glands of Brunner large and projecting. Mucous membrane of small intestines of bright scarlet, with injected vessels ramifying on it. No. 2, of Plate II. represents a section of the iliac mucous membrane. That of colon approaching to the same, but less intense. Glands of Peyer not visible; those of Brunner like millet seeds. Liver light colour; consistence as usual; very little blood in it. Gall-bladder moderately distended with bile; gall-duct free, probe passing through it with facility. Spleen small and corrugated. Kidneys unaffected. Bladder empty and contracted.

Remarks.—In this case collapse followed soon after the copious depletion which was made. The economy appeared unable to call into operation any recuperative power. No effort towards reäction appeared. The vomiting ceased, and the profuse transpiration was checked in the evening, but the intestinal discharges continued.

The peritoneal inflammation, of which the most undoubted evidences existed in the structure, is an unusual complication. This is the only instance in which I met with it. In all the other cases the serous membranes were remarkably dry, as though the usual serosity lubricating their surfaces had been deficient. The intestinal mucous membrane was also, in this instance, more intensely red and inflamed than in any other case I have witnessed. The inflammation appeared to have been of the erythemoid character, being uniformly diffused, and affecting the vascular tissue principally. The follicles were not enlarged as they are seen in most cases of cholera, exhibiting the appearance of an eruptive disease of the intestinal mucous membrane. This state of the mucous follicles, such as I have met with it in thirteen out of fifteen cases of cholera, is shown in Fig. 3, Plate II. The distinct follicles, (glands of Brunner,) are seen enlarged, presenting the character of pimples. Very frequently the opening of the ducts is to be perceived having the appearance of a dark spot on the apex of the enlarged gland. In Fig. 3, towards the lower edge, is also seen a patch of the aggregated follicles, (glands of Peyer,) tumid, enlarged, and elevated above the general surface of the intestine. This specimen was taken from a female who died from a violent attack of cholera of a few hours continuance. A similar enlargement of the follicles is very common in the superior portions of the small intestines and lower portions of the colon, in the disease so generally termed typhus in this country, (follicular enteritis.) In the ileo-cœcal portion of the intestines, the principal location of the disease, the glands of Brunner and of Peyer are destroyed by ulceration, which often involves the whole of the surrounding mucous membrane. Receding from this point in either direction, the follicles are less affected, until they are seen as in the plate, simply enlarged. In those patients that escaped from the collapse of cholera, and in whom typhoid symptoms supervened, under which they have succumbed, I found precisely the same condition of ulceration in the ileo-cœcal region that we are accustomed to meet with in the Alms-house patients who die of typhus fever.

Pathology.—From the phenomena attending the third and fourth periods of cholera, as illustrated by the preceding cases, its pathology may be determined, it appears to me, by the application of physiological principles with perfect perspicuity. The leading features unquestionably are, 1st, the failure or cessation of the circulation both general or vascular, and capillary or organic; and 2d, an alteration in the quality or deterioration of the constitution of the blood. These phenomena or conditions of the economy are engrafted on or superadded to those of the first and second periods. The constant penetration of the tissues and organs by arterial, oxygenated, or scarlet blood, is an essential condition of vital activity. Whenever the quantity of blood, which is a constituent element of every living organ, is reduced below its normal amount in an organ, or the blood is changed in its constitution, the vitality of that organ is diminished, or it perishes. The skin, inelastic and shrivelled, the sunken features, the pulse feeble or vanished, the veins and arteries when opened empty of blood, or that fluid escaping in a small and feeble stream without jet; the blood immoveable by pressure in the tissue of the lips and gums, and in the hands, feet, fingers, and toes, are all conclusive evidences of this diminished amount of the fluids circulating in and permeating the vascular system, and the tissues of the organs. The cerulean, livid, and plumbaginous hue of the extremities, often of the whole body, and of the internal tissues, the blood taken from the arteries scarcely differing from that in the veins, are equally conclusive as to the profound alteration the blood has undergone, and the almost entire absence of oxygenated, arterial, or vital fluid in the economy.

In the third and fourth periods of cholera we have then existing as its peculiar pathology, 1st, the extensive irritation of the alimentary mucous membrane, and consequent determination and accumulation of blood in that tissue, which are the primitive pathological condition of the first and second periods; 2d, the exhaustion and prostration of the vital forces and vital activity, resulting from the cessation of the circulatory movements and stagnant state of the capillary or organic circulation.

Whence arises, is the next question that presents itself. this enfeebled condition of the circulating powers? What has produced this exhaustion, and even abolition of the circulation of the fluids, and consequent overthrow of the functions on which the vitality of the organism depends?

The explanation of these phenomena is resolvable in two methods. The first is loss of power in the nervous system: this is a very common supposition. It is a necessary consequence of the hypothesis, that the capacity of an organ to act depends on its nerves, at best a problematical conjecture, and that this power in the heart is derived from the spinal marrow, a doctrine supposed to have been established by Le Gallois. The errors of this experimenter have been so clearly exposed, and his conclusions so completely invalidated, that it is a matter of surprise the opinion he advocated should continue to be reproduced. The facts of the disease give no countenance to this supposition. In the first periods there are no evidences of enfeeblement of nervous power. On the contrary, the cramps of the voluntary muscles, and the spasms of the muscular tunic of the alimentary canal, are direct indications of an opposite condition—they indicate excitement and augmented energy of the nervous stimulations exciting the muscular organs. The muscular power of patients in this disease is remarkable, considering its great intensity. They are often seen to walk into the hospitals, when without pulse and a short period previous to dissolution. When the circulation is too feeble to be longer perceptible, they still enjoy great muscular energy, move about without difficulty, assist themselves, sit up, or even rise from bed, and often do these a few moments before they expire. There is no evidence that the failure of the action of the heart, and of the stagnant state of the organic circulation, are attributable to a deficiency of nervous energy. It is mere conjecture.

The insufficiency of the first explanation is palpable, and we must resort to the more direct, obvious, and quite adequate cause, found in the exhaustion and alteration of the circulating fluids by the excessive evacuations from the stomach, bowels and skin. In the analysis of the blood contained in the first part of this essay, the larger portion is seen to consist of water holding in solution a variety of saline principles. The irritation of the alimentary mucous membrane, or properly, parenchyma, being secretory in its effects, throws off these elements, and the discharges being large in amount, and rapidly induced, the excessive drainage exhausts the blood. It is then no longer sufficient in quantity to fill up the vascular and angeal apparatus. Shrinking and shrivelling, first of the remoter tissues, capillaries, and vessels, ensue; the blood no longer filling the calibre of the arteries, the pulse disappears, and the heart, losing its accustomed stimulation, acts with diminished energy. The rapid and excessive evacuations of cholera produce, as it respects *the volume and force of the circulation*, precisely the same results as profuse hæmorrhage; and between a choleric patient in collapse and one exhausted by hæmorrhage, many points of resemblance prevail. By the drainage of so large a portion of the aqueous element of the blood, this fluid acquires a viscidity greater than is natural, approaching to the consistency of molasses or tar, which becomes a further impediment to its circulation. The water of the blood is the vehicle or medium which suspends the solid elements, the globules and hematozine, and carries or distributes them through the vessels and tissues. The diminution of this element to a certain extent, by impairing the fluidity of the blood, is alone adequate to arrest the circulation—to produce its accumulation in the right cavities of the heart, of consequence in the venous apparatus emptying into them, and its stagnation in the capillary or angeal tissue of the organs. This deficiency of the aqueous portion of the blood is not a mere conjecture, or inference drawn from the amount of evacuation. It is a fact sustained by positive proof. Repeated analyses of the blood of choleric patients establish the fact, that the serous fluids, the water and saline principles, are much less than in healthy blood, and the quantity of hematozine is proportionally augmented. The chemical examination of the fluid evacuated from the bowels, concurs to the establishment of the same fact. It bears a strong analogy to the serum of the blood, consisting of the saline principles of the blood and albumen, held in solution by water. We have thus an explanation direct, palpable, demonstrated, and perfectly adequate to the production of the phenomenon, whose solution is sought for. The extreme debilitation of the heart and cessation of the circulation, are to be attributed to exhaustion of the circulating vital fluid, and to its viscidity depriving it of the power of mobility.

The deterioration of the blood, the absence of arterial blood, or the proper vital sanguine fluid, is accounted for from the operation of the above cause. It is now a settled fact, that the air or oxygen does not redden the colouring matter of the blood, except through the medium of the serum, and consequently as this is abstracted from the blood, the influence of the air on that fluid in the function of respiration is enfeebled or entirely lost. Hence the blood is but partially oxygenated; the difference between the arterial and venous blood is nearly or quite imperceptible. The consequence of this state of the circulating fluid is the reduction to the lowest ebb of the vital forces, of vital activity, and of the vital organic movements, for which the presence of arterial blood in the tissues, is an essential circumstance.

From these facts can now be understood the incapacity of the economy to take on reäction, either from its own recuperative operations, as in ordinary febrile diseases, or by the artificial resources of our profession. For the production of reäction, which is the irradiation or diffusion of a local excitement or irritation, vital power is necessary. The vital forces must possess energy, vital activity be fully developed, the sympathies or nervous connexions of the organs in full action, and the tissues receive the augmented supplies of arterial or vital fluid necessary to the development and maintenance of the excitation induced. None of these requisites are present in the collapsed state of cholera, and hence necessarily proceeds the difficulty and often impossibility of reäction.

A confirmation of these views is derived from the effects produced by the injection of water, or a weak saline solution into the veins. In most instances a speedy reänimation is produced—the pulse returns, the temperature revives, the præcordial distress is relieved, and for a period the patient appears perfectly restored. The mere addition of water to the blood, by rendering it again fluid, restores the circulation, and renews the functions of the organs. But this process does not remove the original cause, the secretions and evacuations continuing, the previous exhaustion is reproduced. Venous injection is a mere palliative of one of the consequences or effects of the primitive affection, and if that be not removed, it is only temporary in its action. Justice has not been done to this remedy. During its employment, means have been resorted to at the same time—powerful stimulants, heated vapour, hot baths, active purgatives, large doses of narcotics and stimulants, which have counteracted the beneficial effects of the injection in reäwakening the circulation.

Treatment.—Adopting the above pathological views of the proximate causes of the fourth period, or state of collapse, the indications of treatment become well defined. They are, 1st, to arrest the inordinate evacuations emptying the vessels, enfeebling the heart, and exhausting the circulation through the stomach, bowels, and skin. 2d. To restore the wasted fluids by giving to the patients constantly drinks of various kinds, and administering aqueous enema intended to remain in the bowels. 3d. To continue the treatment calculated for the first periods of the disease, which is to allay the extensive irritation of the alimentary mucous membrane. 4th. To quiet the irritation of the nervous system causing spasms and cramps: and 5th. To produce as early as possible diffusion or reäction.

The first of these indications is fulfilled in different manners. The safest, in the cases of the temperate and robust, is the direct antiphlogistic treatment. This consists in allaying the vomiting by the effervescing draught; iced carbonated water; small pieces of ice constantly held in the mouth; leeches or cups to the epigastrium and abdomen. General depletion when collapse is threatened is highly dangerous. It is admissible only in the first periods and in robust individuals, especially of the sanguine temperament. When the circulation is already enfeebled and failing, the abstraction of blood from the emptied vessels is a measure calculated to insure exhaustion, the proximate cause of the collapse. Subsequent to the employment of these, or at the same time, lime water and milk may be administered every hour. When spasms exist, opiates in small doses, and camphorated water, are demanded, and are often useful. Calomel in the dose of gr. ss. to gr. i. with acetat. plumbi, gr. i. given every hour or half hour will succeed in some instances.

The same end is attained by an opposite method, and is best adapted to those who are threatened with rapid exhaustion. It is not as safe in the more robust individuals, and must not be persisted in for too long a period. This method consists in direct or immediate revulsion, converting the secretory irritation of the alimentary mucous membrane into a higher grade of action or inflammatory irritation, and thus arresting the evacuations. In this manner do the mustard and brine emetics operate, as also ipecacuanha, and some of the stimulant and irritating cathartics employed. Calomel in large doses, by changing the mode of irritation, will accomplish often the same end. When the evacuations have been controlled by the remedies of this character, a new danger ensues. The patient has to encounter the hazards of a gastritis and enteritis, with a febrile reäction having those local affections for its basis, and attended often with secondary sympathetic determinations to other organs of great intensity. The excitant, direct revulsive treatment must be immediately abandoned when the signs of these appear, and the antiphlogistic substituted in an appropriate manner.

The cutaneous transpiration proves exceedingly exhausting to the patient, and is of itself sufficient often to bring on collapse. It should never be excited by surrounding the patient in blankets, or enveloping him in warm vapour. Prior to our own experience of the disease in this city, and relying on European statements, the sanitary committee, acting on the advice of the Consulting Medical Board, made most ample provision of various heating apparatus, steam baths, stomach warmers, or other similar means. All the bedsteads of the hospitals were adapted for the use of steam, and in the management of the first cases these means were assiduously employed. No patient under this treatment survived over from four to six hours, although some had strength sufficient to walk into the hospital. Heat was most distressing to the patients, who resisted its application, and protested often vehemently against its employment. It must be confessed, that the prejudices and excitement of the public against the hospitals in the commencement of the epidemic were not without foundation. This method was soon abandoned. The patient succumbs the more rapidly in proportion to the profuseness of the transpiration. It is best checked by cool air, frictions made with cloths dipped in iced water, or with ice itself, followed up immediately with dry frictions. Frictions with actively irritating liniments, with dry chalk, and similar measures, were found often effectual in arresting the cutaneous discharge.

The evacuations from the bowels are best restrained by small doses of opiates, or the same given in enema, either of simple water, mucilage, or saline solution. In some cases astringents are useful. I prefer of this class the rhatania.

The second indication is obtained by administering freely of drinks and liquids to the patient While the stomach is very irritable, and the thirst intense, ice, iced water, iced Seltzer water, or carbonated water, are the most grateful to the patient, and the most frequently successful means. In persons who have been addicted to the excessive use of ardent spirits, some stimulus is often required, as small portions of brandy, wine, or carbon. ammoniæ, aq. ammonia, or others of this class. The weak animal broths, as chicken, mutton or veal water, were found very useful. Gum, rice, and barley water were advantageous, as allaying irritation, affording light nutriment, and replenishing the circulation.

The third indication is fulfilled by the same means recommended for the first and second. They allay irritation, and it is by that operation they arrest the vomiting and the profuse, exhausting secretions and evacuations. When the direct revulsive treatment is followed with a view to suppress the evacuations, as soon as that object is accomplished, the remedies must be cautiously employed, or entirely withdrawn; as then, they oppose the obtaining of this indication. Small doses of opium and calomel, or opium, calomel and ipecacuanha are adapted to this end—together with opiate enema.

The last indication can never be obtained until the evacuations have either entirely ceased, or are very considerably diminished. At least, such is the result of my observations. While they continue, and the circulation, general and organic, is reduced to a low ebb, and the vital forces in all the organs nearly extinct, diffusion or irradiation of excitement cannot be accomplished. For this purpose, mobility of the organic fluids, (the fluids of the capillaries,) is indispensable.

The most effectual means are cutaneous revellents, and the safest direction to give the excitement is to the skin. Frictions, dry, or made with irritating liniment, sinapisms and blisters to the abdomen and extremities, by exciting the cutaneous tissues, are the most efficient means of rousing the dormant forces, and of inviting the excitement from the internal surfaces to the exterior. The diffusible stimulants may be brought into action with this intention in many cases. The best, most certain, and safest mode of employing them, is in minute doses frequently reiterated. In this manner their absorption and diffused action is procured, while their local excitation is to a great extent obviated.

Vigilance is required in watching the reäwakening of the forces, and the production of reäction. It is not uncommon for it to occur in a single organ with great rapidity, and to occasion a fatal result. Apoplectic symptoms in this manner are often the immediate cause of death. In one case to which I was invited in consultation, a suffocating catarrh in one lung, with pneumonia in the other, were developed in the reäction, and destroyed the patient in a few hours, from the termination of the collapse.

The fourth period, or confirmed concentration and collapse, when completely established, must necessarily prove fatal in the great majority of cases. It is a moribund state. No method of treatment can be more than partially—very partially successful. The great object should be to prevent the disease from arriving at this period. The best system of treatment is that under which, in any given number of cases, the fewest reach this stage. The mortality of the disease is then inconsiderable. When collapse has been induced, the results of different methods will not vary to any great extent. No one can boast of more than few and scattered triumphs. The mass will and must perish. The vital lesions are too considerable, and vital functions too profoundly disabled to be restored with certainty by any human means.

It is an argument used by some, that because the patient is in a most critical and dangerous position, that, therefore, violent treatment and powerful remedies must be resorted to. This arises from the employment of figurative language and the personification of disease. The disease is a giant, and pigmy remedies cannot overthrow it. Such or similar expressions are employed. But the disease is nothing separate, nothing distinct from the organs. It is a modification, and effects arising from the modification of the organs. Remedies cannot influence disease independent of the structure. They are modifiers of the vital activity and movements of the tissues. When the vital forces are prostrated to the exceedingly low ebb, they are seen to be in the period of collapse, the vital movements in the tissues nearly extinct, and the vital functions reduced to their lowest state, is there not a greater probability that violent—energetic treatment so called—and excessively perturbating remedies, will extinguish the feeble remains of life, rather than recall them to their wonted activity? This has been my impression, and such I believe the evidence afforded by my opportunities of observation.

The fifth period of the disease will not require more than a mere allusion to its character. It consists in the general febrile reäction that occasionally ensues in those who escape from the fourth period, or confirmed collapse. It assumes all the characters of typhoid fever—it cannot be distinguished from the common cases of that disease. In the fatal cases, I observed precisely the same anatomical lesions as in that disease—intense inflammation, and extensive ulceration of the glands, both of Peyer and Brunner, of the mucous membrane of the ileum and colon, with accidental lesions in the brain, in the stomach and other organs, but which are not uniform and constant.

We will conclude our remarks with the following tabular statements of cases of cholera epidemica in Hospital No. 5, Public School House, corner of Sixth and Lombard streets, under my charge as Physician-in-Chief, having as Assistant Physicians, Drs. TURNPENNY, WHELAN, H. TUCKER, BARABINO and STAPLES.

The hospital opened July 28th, and closed September 1st, a period of thirty-four days—number of patients treated, 69—average treatment of each patient two days and a fraction.

Number of admissions, 69—deaths, 20—deaths within twenty-four hours after admission, 14.

Table of Cases and Results arranged in Periods of the Disease.

	Incipient Irritation, First Period.	Confirmed Irritation, Second Period.	Incipient Concentration and Collapse, Third Period.	Confirmed Concentration and Collapse.
	5	21	14	20
Recovered	5	21	13	1
Died	0	0	1*	19

Table of Ages of the above Patients.

Under 10 years	4	Deaths	0
From 10 to 20	6		3
20 to 30	25		6
30 to 40	18		5
40 to 50	7		2
50 to 60	7		3
60 to 70	2		1
	69		20

Table of Sexes and Colour.

White Males	15	Deaths	3
Females	12		2
Whites	27		5
Black Males	17		8
Females	25		7
Blacks	42		15

Males 32—Females 37—Total 69.

Of the above patients there were,—Intemperate, 33—Temperate, 14—Unknown, 22—Total 69.

There existed preliminary symptoms in 34—Total absence in 4—Uncertain, 31—Total 69.

Tabular View of Symptoms in the above Sixty-nine Patients.

Vomiting.	Purging.	Cramps.	Abdominal Pain.	Shrivelled Extremities.	Cold Tongue and Surface.	Livid or Blue, (Whites.)
49	59	42	34	25	37	13

In private practice I attended 55 patients, of which the following table presents the periods and results.

	First Period.	Second Period.	Third Period.	Fourth Period.	Totals.
Number of Patients	26	23	5	1	55
Recovered	26	23	5	0	54
Died	0	0	0	1†	1

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* Passed into fifth period, and died of typhus fourteen days after admission.

† Died in six hours from attack.

Numerical Table of Symptoms in Fifty-five Patients of Private Practice.

Nausea.	Vomiting.	Diarrhœa.	Cramps.	Pain in Abdomen.	Excessive Thirst.	Cold Surface.	Feeble Pulse.	Blue Extremities.	Collapse Complete.
36	37	49	20	48	16	14	14	3	1

Whole number of days of attendance 143—average treatment of each patient, 2⅓ days.

Table of Cases attended in consultation after the treatment had been commenced.

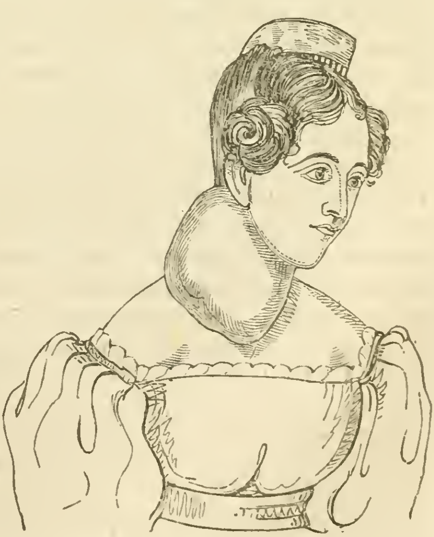
	Second Period.	Third Period.	Fourth Period.	Total.
Number of Patients -	2	1	5	8
Recovered - - -	2	1	1	4
Died - - - -	0	0	4	4

Numerical Table of Symptoms in above Cases.

Vomiting.	Diarrhœa.	Cramps.	Pain in Abdomen.	Anhelose.	Cold surface and tongue.	Blue.	Cold sweat.	Complete collapse.	Died within 24 hours.
7	7	7	8	7	6	5	5	5	3

ART. V. *Extirpation of a Tuberculated Sarcoma, from the Neck.* By VALENTINE MOTT, M. D., Professor of Operative Surgery in the College of Physicians and Surgeons of New York.

IN the month of February, 1832, Miss ——, aged nineteen, came from the country, for the purpose of consulting me about a tumour situated in the neck.



She stated, that it had been growing about five years, and as it inconvenienced her very much from its great size, she was desirous of having it removed. It had never been painful, and her general health had been in no way affected.

As it was still increasing in size, I fixed on an early day for the operation, and performed it in the following manner.

An incision was made, in the direction of the inner edge of the sterno-mastoid muscle, from the occiput to the clavicle, and another from about the middle of the first, obliquely over the most projecting part of the tumour, to the top of the shoulder. Upon cutting through the platisma, the sterno-mastoid was found expanded over the tumour in its whole course, and not thicker than the first named muscle. In order to facilitate the subsequent steps of the operation, its fibres were divided in the direction of the second incision. The deep fascia of the neck was next cut through, and the cellular investments removed until the lobular form of the disease fully presented itself to view.

It was next separated from the clavicle, sterno-hyoid muscle, sheath of the vessels, scalenus anticus, and omo-hyoid muscles, and turned upwards and backwards. On arriving opposite the os hyoides a portion was found to pass under the digastric muscle and styloid process, pushing up the parotid gland, and another to extend forwards, resting on the pharynx. That which passed under the styloid process, so surrounded the deep jugular and internal carotid artery, that they seemed to pass through the tumour.

In order to remove these portions with more safety, it was deemed expedient to remove the mass of the disease by cutting through it at this point. The flow of blood from every incision into its substance was surprisingly profuse, (much more so, than in any malignant tumour I have ever encountered,) and I immediately directed firm pressure to be made with a sponge, and tied the carotid artery a little below the thyroid cartilage. I was now enabled, although it still bled profusely at every stroke of the knife, to complete the subsequent steps of the operation.

Every part of the tumour was removed, with the exception of that portion involving the jugular vein, the principal part of which was drawn down and embraced in a ligature. The external jugular, external carotid, and a number of arteries, were tied. The wound was brought together by several stitches; and adhesive straps, lint, compress, and roller, completed the dressings.

An antiphlogistic treatment was pursued until suppuration was established. The wound healed readily; the ligatures from the carotid, and from the small portion of the tumour, separated in regular order, and the patient returned home in about four weeks. She has since married, and continues perfectly well.

New York, 25 *Park Place*, *March* 16*th*, 1833.

REVIEWS.

Art. VI. *Physiologie des Menschen*, von Friederick Tiedemann, Lehrer der Anatomie und Physiologie an der Universität zu Heidelburg. Erster Band. Allgemeine Betrachtungen der Organischen Körpern. pp. 719. Darmstadt, 1830.

Traité Complet de Physiologie de l'Homme. Par Fred. Tiedemann, Professeur d'Anatomie et de Physiologie à l'Université de Heidelberg. Traduit de l'Allemand; par A. J. L. Jourdan, D. M. P. Première et deuxième partie.—*Physiologie Générale et Comparée.* Paris, 1831. pp. 798. 8vo.

Human Physiology. By Fred. Tiedemann, &c. Vol. I.—*General Observations in Relation to Organized Bodies.*

THE subject of physiology has of late years acquired an interest with the profession and the public, which it did not previously possess. It may, indeed, be esteemed a new science; for valuable as was the information concerning the functions of the frame contained in the writings of Haller, Lieutaud, Hamberger, Ludwig, Barthez, Cullen, Metzger, Caldani, and other distinguished investigators of the animal economy, it too frequently happened that their deductions had but a slender basis, and that instead of trusting largely to experiment, their descriptions of the functions were greatly indebted to the imagination; and far removed from the precision that characterizes the physiology of the present period.

Notwithstanding, however, all the improvements in the science, much is unfortunately still left in doubt and conjecture. Most of the operations of the frame are executed in the very tissue of the organs, and consequently in parts which are too molecular to admit of observation, even when vision is aided by the most powerful optical instruments; and our knowledge is too frequently limited to the fact, that a function is executed in a particular organ, without our having the slightest conception of the mysterious agency which accomplishes it. We know positively that the salivary glands secrete the saliva. We see organs possessed of a peculiar formation; having arterial trunks distributed in their tissue, until the final ramifications can no longer be detected; and possessing a distinct set of vessels, whose origin equally escapes detection, and which contain a fluid differing essentially in properties from the blood of the artery. If we extend our observation to the most minute perceptible branches of the artery, we find arterial blood within them, whilst in the smallest ramification of the other set of vessels the peculiar fluid is always distinguishable. We are led, therefore, to the conclusion, that between the termination of the artery and the radicles of the excretory ducts, as these vessels have been termed, an action of separation and of elaboration has been effected, by which a new fluid has been formed; in other words, that the gland is the organ for the secretion of the saliva. But although this is evident, the intimate nature of the operation that accomplishes it is totally inappreciable. Careful observation and reflexion inform us, however, that the gland must be in a certain condition in order that the function may be properly effected. The arterial blood must be distributed to it in due quantity and force; the capillary vessel, by which the secretion is probably effected, must be free from irritation, and there must be no obstruction of the duct which conveys the product of the secretion to the proper outlet. We thus learn the laws that govern the physiological operation, although we may still be profoundly ignorant of the precise mode in which it is accomplished. Analogous to this is our want of knowledge of certain imponderable agents, which astonish us by their effects in physics. The nature of the electric and magnetic fluids, in their various modifications, and of the powerful force by which bodies, as well as their molecules, are attracted towards each other, is as mysterious and as unknown as the force of life; yet by observation and reflexion we succeed in attaining an acquaintance with the laws that govern these singular agents, and a wise theory enables us to construct various instruments, which, by acting in accordance with those laws, are of the most signal value to man. By one of these—the mariner's compass—voyages across the trackless ocean are conducted with a precision, which, prior to an acquaintance with the laws of terrestrial magnetism, must have been altogether wanting.

The great object of physiology is to fathom the laws by which the vital principle effects the various phenomena of the living machine; and to detect the material condition by which these phenomena are modified consistently with health; whilst the attention of the pathologist is directed to the material conditions which derange the machine, and to the indications that announce such derangement. Pathology is, consequently, the kindred branch of physiology; the mode of investigation is alike in both; and hence the term 'diseased physiology,' which has been given to the former by some physiologists.

It has been wisely remarked by a writer on medical education, in a recent number of the *London Journal of Education*, in an article not distinguished, however, for much profoundness or originality of sentiment, as somewhat singular, that the interesting and important department of anthropology, which forms the subject of the work before us, should so generally have been looked upon as subordinate to anatomy, and incorporated with that laborious branch of medical science in the same professorship. Nothing can, indeed, be more discrepant than the two studies, if the chair should embrace descriptive anatomy only, as has generally been the case. Whilst the one only requires, like every other branch of science which is merely descriptive, a certain degree of attention, and a requisite memory, the other is physico-moral in its mode of investigation, demanding a competent knowledge of descriptive anatomy, and of the higher branch of general anatomy—the study of which is of comparatively modern introduction—as well as of the different collateral sciences, which throw so much light upon most of the physiological operations—as natural history, chemistry, physics, &c.

Owing, however, to the rapid strides made by anatomical science within the last forty or fifty years, it is rare to meet with a teacher whose knowledge is limited to descriptive anatomy. Since the time of BICHAT, anatomy has been considered to include more than the dry detail of bones, muscles, ligaments, vessels, and nerves, pushed to a degree of needless minuteness, and crowding the memory of the student with a tedious list of names to be speedily forgotten, but unfortunately with the effect of diverting him from the more useful parts of his profession, and accustoming him to exercise his verbal memory instead of inciting him to reflexion. The anatomist now occupies himself, in addition, with the structure, texture, and arrangement of the different organs and apparatuses, and their various correlations, and endeavours to penetrate into the origin and formation of the human body, the character of its constituents, and the changes that supervene in the different stages of existence.

On all these topics the physiologist has likewise to be instructed. Although the most intimate acquaintance with the structure of an organ or apparatus of organs may not teach him the function executed by it, the function cannot be deduced without a certain degree of anatomical knowledge of the parts concerned in its production. Haller has termed physiology, not inappropriately, *anatome animata;* and in most of the works on physiology, the study of the structure has been combined with that of the function.

The numerous topics of anthropology, comprised under the head of *physiology*, have been well detailed by M. Tiedemann. They indicate how vast must be the study if extended to the utmost limits of which it is capable. In the preface to the excellent, but diffuse '*Elementa*' of Haller, consisting of eight volumes, quarto, he asserts that he has only embraced the first lines, as it were; and if we are to judge by the portion of the "*Physiology of Man*" of M. Tiedemann which has appeared, its extent can scarcely be less than the *Elementa* of his distinguished countryman—for so he may be considered.

In the Introduction to the work before us, M. Tiedemann makes some pertinent comments on the method of studying physiology—the foundations of which he properly considers—as in the case of physics in all its ramifications—to be observation and induction.

> "To observe and experiment," he remarks, "we at times employ the senses, as nature has provided them, and at others add the assistance of different instruments. In the latter case, it is of importance to be certain of the goodness of the instruments we select, and to know how to use them. Without these two conditions we run the risk of observing incorrectly. The following rules are essential for any one who professes to be an observer. 1st. Above all it is important that the senses should be in a perfectly healthy and regular condition. The best manner of testing this is to make observations simultaneously with other persons. It is moreover necessary to know how to detect and avoid illusions and hallucinations of the senses. 2dly. Another indispensable qualification for a good observer, is to be able to direct his cool and prolonged attention entirely to the object of his observation. This is the only way to observe with certainty and perseverance, and to suffer nothing to escape. A taste for observing and experience communicate this degree of attention. 3dly. The observer should divest himself, during his researches, of every opinion he may have previously embraced, as this is a source of the gravest errors. A partial observer finds whatever flatters his favourite theory, and omits whatever is opposed to it. This it is which has frequently rendered the philosophical systems of physics dangerous. History instructs us that physiology and medicine, in particular, have more than once had reason to repent the indiscreet application of principles admitted by a dominant school. Every kind of mental prepossession is injurious to correct observation. When we begin to observe, theory must be forgotten, except when we are desirous of submitting theoretical ideas themselves to the crucible of observation. No theory should be esteemed correct and valid, unless it has been deduced from observation, and afterwards confirmed by fresh observation. 4thly, and lastly. The observer and experimenter should be animated by the love of truth. Truth should be his sole aim, without troubling himself whether his observations and experiments may confirm or refute opinions admitted by him or by others. Let him never forget the maxim of the great Haller:—*Boni viri nullam oportet causam esse, præter veritatem.*
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> "The errors which not unfrequently occur in observing or experimenting, are owing to simple ideas being taking for observations, and consequently to observing badly, and affixing to the objects a product of the imagination. On the other hand, too little attention is paid to the contemplation of objects; they are not examined with sufficient care, and accordingly a superficial acquaint-

ance with them is alone attained. These two faults influence the judgment we form of objects: in the former case something extraneous is added, and in the latter something essential is neglected. The two faults may also be combined, and induce error. They can only be avoided by conforming to the precepts traced above, and by frequently repeating unprejudicedly our observations and experiments.

"As regards observations to be made with the internal sense, they present considerable difficulties. Tranquillity and presence of mind are especially requisite in every delicate internal observation instituted on ourselves. Kant properly remarks on this subject—'Either there is nothing extraordinary passing within us, and therefore nothing to observe, or we experience internally an extraordinary emotion, and in such case we are rarely sufficiently masters of ourselves to be able to observe calmly.'" p. 13.

It is obviously impracticable to arrive at any satisfactory results regarding the play of the human living machine so far as concerns the internal organs. Vivisections are inadmissible, and the only opportunities afforded us for observation are when any extensive wound exposes the larger cavities. The physiologist is hence compelled to study the living machine on animals, either whilst alive, or immediately after they have been killed. It is in this way that much of the knowledge we possess, regarding the functions of living organs, has been obtained; and although it has been fashionable to employ much mawkish sensibility in stigmatizing the vivisections of the physiologists and toxicologists, of continental Europe more especially, we are indebted to them for large additions to our physiological knowledge, as well as to our stock of agents for depriving some of the most deadly poisons of their terrors.

One of the most distinguished of these experimenters is the celebrated chemist Orfila, to whose researches more animals have probably fallen victims than to those of any other individual, yet if no other result had followed his vivisections, than the discovery of the effect of albumen in rendering corrosive sublimate innocuous, the reward would have far exceeded the sacrifice. To this discovery the distinguished chemist, Thenard, is indebted for his useful life. Whilst engaged in lecturing to his class, he sipped from a glass, by mistake, a sufficient quantity of corrosive sublimate to have destroyed him, but having the white of egg at hand, he quickly swallowed it, and sustained no inconvenience.

Wanton experiments on living animals, in the hands of ignorance and cruelty, cannot be too strongly deprecated; whilst those that are instituted by the judicious physiologist, with as little suffering as is compatible, are not only justifiable but laudable. Fortunately it happens that, in the present state of the science, the experiments on many points, are so numerous and diversified, that the only difficulty is to deduce accurate inferences from them. Other points require fresh experiments, which may still, however, leave them in obscurity, as the intimate phenomena of vitality are too molecular and enigmatical to admit of the expectation that they will ever be unfolded.

> "The services," says our author, "which Harvey, Haller, Fontana, Spallanzani, and others, have rendered, by their experiments, are duly appreciated by all true physiologists. If man does not hesitate to kill so many animals, at times in the most cruel manner, to satisfy his necessities or his pleasures, how much less can we blame experiments on living animals, which have no other aim than the extension of our knowledge, and at the same time the good of our fellow men, as the information attained in this manner, concerning the manifestations of life, has numerous applications to medicine? To refer to a few examples only;—all that we know regarding the cicatrization of wounds; the obliteration of arteries after ligature; the enlargement that occurs in the vessels collateral to a principal trunk; and on the action of poisons and the appropriate antidotes, is the result of a multitude of experiments made on living animals. It is infinitely more conscientious to rectify and augment in this manner our knowledge of life, than to experiment on the sick, guided by imperfect systems which are frequently the mere offsprings of the imagination. The intimate conviction, indeed, of the great value of physiology, as a solid basis of rational medicine, has, in all times, impelled men of genius to have recourse to experiments on living animals to elucidate the history of the functions of the human frame. All the irrefutable facts that human physiology possesses, touching the knowledge of the different functions of respiration, circulation, digestion, absorption, and muscular and nervous irritability, are almost wholly the result of experiments on living animals, from which, by analogy, conclusions have been deduced applicable to man." p. 15.

It is, however, in the deduction of proper inferences from experiments on animals, and in their application to man, that the great difficulty exists. Too little attention is often paid to the deranging influences caused by the excessive irritation of the nervous system, induced by operations frequently of a most painful kind; whilst the results of experiments on the lower animals, which differ so essentially from man in organization and function, have been too often, and without due reflexion, transferred to him. It is obvious that analogy can only be justly invoked, when the subjects of the experiments belong to the higher classes of animals; and even here we occasionally meet with singular anomalies. In some experiments, instituted by Magendie, for the purpose of discovering the encephalic seat of the motive forces, he found that the cerebral hemispheres might be cut deeply in different parts of their upper surface, without any evident alteration in the movements. Even their total abstraction, if it did not implicate the corpora striata, he found to produce no greater effect, or at least none but what might be easily referred to the suffering induced by such an experiment. But the results were by no means alike in all the classes of vertebrated animals. Those detailed were observed on quadrupeds, and particularly on dogs, cats, rabbits, Guinea pigs, hedge-hogs, and squirrels. In birds, the removal or destruction of the hemispheres was often followed by stupor and immobility, but in numerous cases they ran, leaped, and swam afterwards: and in reptiles and fish the loss of the hemispheres seemed to exert but little effect upon their motions. Again, the frog will continue sitting, apparently unconcerned, for hours after it has been eviscerated; the tortoise walks about after losing its head; and the polypus, when divided by the knife, forms so many separate animals. If the head of a wasp be severed from the body, the head will attempt to bite, and for a considerable time the abdomen will try to sting. Dr. Harlan cut off the head of a rattlesnake, and grasping the part of the neck attached to the head with his finger and thumb, the head twisted itself violently, and endeavoured to strike him with the fangs. A live rabbit was afterwards presented to the head, which immediately plunged its fangs deep into the rabbit; and when the tail was laid hold of, the headless neck bent itself quickly round as if to strike him.* These cases sufficiently confirm the remark of M. Tiedemann,—that the adoption of the results of experiments on animals for the elucidation of the human functions is more uncertain the more remote the subject of the experiment is from man in its organization; and that the greatest errors may be indulged by unrestrictedly admitting into *human* physiology, the results of experiments instituted on worms, insects, mollusca, fish, and reptiles. (p. 16.)

Some judicious observations are added by the author on the mode in which the different results of experience and observation should be classified by the physiologist, and their truth or fallacy be detected; and he deduces from all his investigations on this subject, that physiology is an experimental science based on rational empiricism; that it ought not to abjure its empirical character in any of its propositions, assertions, and explanations:—that its axioms are conclusions drawn from observation and experiment, and that the rules and laws which induction points out for the phenomena and causes of life, have only a relative value according to the observations and experiments from which they have been deduced, and cannot be regarded as truths until they have been modified or confirmed by ulterior observations. p. 33.

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* Dunglison's Physiology, Vol. I. p. 235.

The great importance of the study of physiology as a branch of medical science is now so universally admitted as scarcely to need a comment. The works of BROUSSAIS and JACKSON sufficiently exhibit the value of the pathological inferences which a knowledge of it suggests. Indeed, one of the most signal improvements that have attended the promulgation of the doctrines of the distinguished French professor, is the inculcation of a better attention to this branch which forms the truly scientific basis of medical knowledge. It is manifestly impossible to form any accurate judgment of the morbid condition of a function without being acquainted with its healthy manifestations; and what errors may not be indulged in therapeutics by an ignorance of this subject?

The whole class of diseases, termed *bilious*, are referred by most practitioners to direct disease of the liver; and medicines are unceasingly exhibited, which, from routine administration, have been presumed to act specifically on the liver, for the purpose of modifying its morbid condition. Calomel is one of these. If a person is presumed to be bilious, this drug is given by preference as a cathartic, because it is thought to possess some special cholagogue virtues, but how exerted the prescriber does not pretend to opine. The instructed physiologist is, however, aware that any irritation, excited by disease or art, at the termination of the excretory duct of any gland, is speedily propagated along the duct to the gland, which is thus stimulated to augmented secretion. He knows, moreover, from experience, derived from his own observations, or from those of others, that calomel is a cathartic which acts more especially upon the upper part of the intestinal canal, as aloes does upon the lower, and hence that it may irritate the termination of the choledoch duct in the duodenum, and thus give rise to increased secretion of bile, and, of consequence, to copious biliary discharges; so that instead of these discharges being an evidence that the individual is *bilious*, they may indicate no more in this case than that a cholagogue purgative has been taken, whilst the liver may have been previously in a perfectly healthy condition. This kind of stimulation of the mouth of the choledoch duct always takes place during digestion, by the contact of the chymous mass proceeding from the stomach, and occasions the necessary secretion and flow of bile into the duodenum. It will be obvious, then, that any undue accumulation of chymous materials in the duodenum, any irritation of the mucous membrane, any duodenitis or gastro-enteritis may give occasion to copious hepatic secretion, and to all the manifestations termed *bilious*, whilst the liver itself may be free from any, except a correlative, derangement.

The advantages of physiology to medicine are dwelt upon at some length by M. Tiedemann; as well as the utility of an acquaintance with the accessory sciences of physics, chemistry, natural history in general, mineralogy, botany, and especially zoology and comparative anatomy, as preliminaries to the study of physiology, but his views are such only as must impress any one who reflects upon the subject.

The work of M. Tiedemann is intended to comprise the whole *physiology of man*, but the volumes before us are entirely occupied with *general and comparative physiology*, and are, consequently, introductory only to the main object.

The subject is divided into two books—the first embracing a *comparison between organized and inorganic bodies*, and the second a *parallel between animals and vegetables.* The former, although furnishing much interesting matter for reflexion, as well as the first section of the latter—embracing a parallel between animals and vegetables as regards their material composition—scarcely requires comment. The second and remaining section of the volumes includes a parallel between the manifestations of activity or of life in plants and animals; and consequently comprises a comparison between the various functions that are characteristic of animal and of vegetable physiology, commencing with the functions of *nutrition.* This section will give occasion to a few observations.

It is well known that many naturalists, as VAN HELMONT, BOYLE, DUHAMEL, &c. have believed that plants are capable of living in pure water; and, of course, of drawing from this source their different elements. WALLERIUS concluded, from his experiments, that all the saline, earthy, and other matters, which are found in plants, are fabricated from the water: whilst BERGMANN and KIRWAN attempted to show that these matters must have been obtained from without. Tiedemann, however, affirms, that vegetables, whose seeds or organs grow in pure water, are chiefly nourished on the mucous and albuminous matters contained in those bodies, and dissolved by the liquid. This has always appeared to us to be the only satisfactory method of accounting for the growth of the hyacynth, tulip, and narcissus, in distilled water; and it has been noticed, that when they have sent forth their roots under such circumstances, they were covered with a mucilaginous or albuminous matter proceeding from the bulbs themselves. The fact is also proved by the much greater succulence of the whole flower than of the bulb.

The inorganic combinations found in plants on incineration, he considers, with De Saussure, Sir Humphry Davy, Lassaigne, and others, to be absorbed from the water in which they are dissolved, and he thinks there is not the slightest proof that living bodies in general, and vegetables in particular, are capable of *forming* elementary substances. The possession of such a power seems, indeed, to be most incomprehensible. Yet we have some apparently anomalous cases in both the vegetable and animal kingdom. Vauquelin found, by feeding a hen for ten days on oats, that 137.796 grains of phosphate of lime, besides 511.911 grains of carbonate of lime, were contained in the eggs and excreta, more than could be accounted for by the food taken; and that of the silica, contained in the oats on which it had been fed, 34.282 grains had disappeared. The inferences, consequently, were, that lime—and perhaps phosphorus—is not a simple substance, but a compound, and formed of ingredients existing in oats, water, or air—the only substances to which the fowl had access; and that silica must have entered into its composition, as a part had disappeared. Since that time lime has been proved to be a compound; but phosphorus still retains its rank among elementary bodies. If, however, we admit the accuracy of Vauquelin's results, which, as he gives them, are certainly arithmetically incorrect, we must be compelled either to regard it as a compound, formed in the plant under the vital influence, or else that the same influence is capable of forming elementary bodies, which we have seen is most incomprehensible. The experiments of Vauquelin require repetition, and *a fortiori* as others seem to have shown, that certain birds cannot produce eggs unless they have access to calcareous earths.

In commenting on the views of different vegetable physiologists, respecting the necessity of organic matters for the nutrition of plants, M. Tiedemann is not accurate in stating the opinions of Mirbel and Smith regarding one point of difference between animals and vegetables.

> "The difference," he remarks, "between vegetables and animals, (laid down by Mirbel and Smith,) in the former subsisting on organic matters and the latter on inorganic, cannot be supported, as is proved, besides other instances, by that of parasitic plants, which live at the expense of the juices of those on which they attach themselves." p. 230.

The remark of Mirbel, in his *Traité d'Anatomie et de Physiologie Végétales*, is, "that plants alone have a power of deriving nourishment, *though not indeed exclusively from inorganic matter*, mere earths, salts, or airs, substances certainly incapable of serving as food for any animals, the latter only feeding on what is or has been organized matter, either of a vegetable or animal nature. So that it should seem to be the office of vegetable life alone to transform dead matter into organized living bodies." On this Sir James Smith remarks, that the idea appears to him so just, that he has in vain sought for any exception to it. The fact, however is, that we have examples of certain animals, which appear to do without organic matter as well apparently as the vegetable. The experiments of HASSENFRATZ, THEODORE DE SAUSSURE, LINK, and others, have shown, that in a soil totally devoid of organic matter, plants vegetate miserably, and often do not shoot at all; rarely proceeding to inflorescence, and still more rarely to fructification; whilst the toad has been found imbedded in rocks,* and gold fish have been kept for months in distilled water;—a circumstance which led Dr. FORDYCE to infer, that animals might live on water and air alone. Again, KESSLER, LABILLARDIERE, GUMILLA, HUMBOLDT, and others, have made us acquainted with savage tribes, who use certain varieties of fat, unctuous earths, as articles of diet; and, according to the last writer, the quantity of clay consumed by the Ottomaques of our own continent, and the greediness with which they devoured it, seemed to prove that it did more than merely distend their hungry stomachs, and that the organs of digestion had the power of extracting from it something convertible into animal substance.

M. Tiedemann regards all nutritive absorption, both of vegetables and animals, as an organic or vital phenomenon. In the upper classes of animals he conceives it to be effected by lymphatics; in other animals, furnished with blood-vessels—the mollusca, crustacea, arachnidea, insects, annelides and radiaria—in which lymphatics have not been discovered, by veins, or perhaps by lymphatics, which open immediately into veins; and in such animals as have had no blood-vessels—the entozoa, (?) medusæ, and polypi, by the cellular tissue. The facts and arguments, however, adduced by Dr. DUNGLISON, in his "*Human Physiology*," appear to show, that in man the chyliferous and lymphatic vessels form only chyle and lymph respectively, refusing all other substances: that the veins admit every liquid which possesses the necessary tenuity; and that whilst all the absorptions, that require the substance acted upon to be decomposed and transformed, are effected by the chyliferous and lymphatic vessels, those that require no alteration are accomplished directly through the coats of the veins by imbibition.

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* Certain experiments recently published by Professor Buckland, of Oxford, have led him to infer that toads cannot live a year totally excluded from atmospheric air, and that it is probable they cannot survive two years if entirely excluded from food, and he therefore concludes, that there is a want of sufficiently minute and accurate observation in those so frequently recorded cases, where toads are said to have been found alive within blocks of stone and wood, in cavities that had no communication whatever with the external air. But the capability of existence for so long a time as that admitted by Professor Bucklandis sufficiently surprising.

M. Tiedemann manifestly believes in the minute lymphatics, which Fohmann, Lauth, and others, have presumed to exist in the intestinal canal, and to communicate immediately with the veins of the intestines, so as to convey substances from the intestinal canal into the venous system. Such vessels would seem, however, to be totally unnecessary, and their very existence has been denied by most anatomists. The coats of the veins readily admit of imbibition, and therefore substances of the necessary tenuity could pass into them without the agency of these vessels; and, again, if we grant that such carrier-lymphatics do exist, there would seem to be no use for the chyliferous vessels and glands through which the chyle proceeds on its way to the thoracic duct and subclavian vein, seeing that it could get at once into the venous blood by means of these lymphatics.

It is probably by venous imbibition that the trifling absorption effected by the human skin is accomplished. In animals, provided with a cuticle, the amount of absorption in this way is but small, and has even been denied altogether; but in those animals, in which the cutis vera is exposed, the nutritive absorption is effected through this envelope. In the polypi, medusæ, radiaria, and vermes, the absorption is active, and, according to Zeder and Rudolphi, those entozoa that live in the midst of animal humours imbibe them through the skin. A few years ago Jacobson instituted experiments on the absorbing power of the helix of the vine, *(Limaçon des vignes.)* A solution of prussiate of potassa was poured over the body, which was rapidly absorbed, and entered the mass of blood in such quantity that the animal acquired a deep blue colour when sulphate of iron was thrown upon it. In the frog, toad, salamander, &c. according to the experiments of Townson and Edwards, the cutaneous absorption is so considerable, that occasionally the weight of water, taken in in this way, is equal to that of the whole body.

The chapter on the *assimilation of food in the first passages* is brief, and comprises the opinions contained in an *Essay on Digestion*, published some years ago by the author in conjunction with M. Gmelin. The power of assimilation—that is of converting the food into the nature of the being it is destined to nourish—a power possessed by all organized bodies, vegetable as well as animal, is properly regarded by the author to be an essentially vital act, and therefore, we would say, beyond the limits of our knowledge. M. Tiedemann, however, affirms it to be owing to the action of liquids secreted by living bodies and added to the alimentary matters, which produce peculiar changes in the chemical composition of those matters, under the influence of the *nisus formativus*, whose agency in generation and nutrition is so much invoked by many of the German physiologists. The action of the different fluids poured out from the supra-diaphragmatic portion of the digestive tube, from the stomach,* and small intestine, and from the liver and pancreas, are doubtless important preliminary steps to the formation of the chyle, but it is probable that they only modify the physical characters of the chymous mass in such manner that chyle can be formed from it by the chyliferous vessels. The true animalization would seem to be effected by those vessels, as they are capable of forming the same fluid—chyle—from the chymous mass presented to them, whatever may have been the nature of the aliment that constitutes it. How this is accomplished we know not, and we only express our ignorance when we refer it to the *nisus formativus* or *Bildungstrieb*.

The chapter *on respiration* is a digest of the opinions of different physiologists on the function as executed by the vegetable, and contains a good account of the peculiarities of the respiratory apparatus and function in the various classes of animals.

The *air-bag* or *swim-bladder* of fishes is regarded by the generality of naturalists as accessary to the organs of motion. It is situated in the abdominal cavity along the spine, and commonly communicates with the pharynx or stomach by means of a membranous canal—the

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* Much light, we learn, has been thrown on the nature and properties of the digestive secretions of the stomach, by certain experiments recently performed by Dr. Beaumont, of the United States' Army, and Professor Dunglison, of the University of Virginia, who visited Washington a few months ago for the purpose. Several years since a Canadian had his stomach laid open by a musket-shot, and several of his ribs so much injured, that a whole rib, and portions of others, required removal. By the skill and attention of Dr. Beaumont, he ultimately recovered, except that an aperture was left communicating with the stomach, and around which the torn edges of that viscus contracted an adhesion. Through this aperture substances can be passed so as to test their comparative digestibility, and gastric juice can be obtained in sufficient quantity for experiments on artificial digestion, &c. The existence of such a secretion always possessing, essentially, the same properties, its solvent, antiseptic, and other qualities, have been satisfactorily established, and we are informed that as soon as Dr. Beaumont has concluded a series of experiments on the comparative digestibility of various alimentary substances, the valuable and interesting results will be laid by him before the public. We may be allowed to express a hope that this Journal may be the chosen vehicle for such publication.

ductus pneumaticus. The bag is well supplied with blood-vessels, and receives nervous branches from the pneumogastric nerve, and from the great sympathetic. The air which it contains is usually composed of the same elements as atmospheric air—oxygen, azote, and carbonic acid. The researches of BIOT showed the proportion between the oxygen and the azote to vary according to the species; and the proportion of oxygen to augment according to the depth at which the fish was caught;—a circumstance that induced BIOT and DE LA ROCHE to endeavour to ascertain the proportion of oxygen contained in sea-water at different depths, but they were unable to perceive any difference. From these insufficient experiments it was inferred, that the air contained in the air-bag is a secretion; that in fishes which live near the surface azote is separated, but in those which live at great depths, the quantity of oxygen is proportionally increased. Further experiments might, however, indicate, that the varying character of the contents of the bag correspond with the air contained in the water at different depths, and thus confirm the views of FISCHER, NITSCH, TREVIRANUS, TIEDEMANN, and others, that the organ is accessory to respiration.

"Those fishes," says our author, "that are remarkable for very active and prolonged movements, seem to be chiefly such as respire with the assistance of this organ. They appear to accumulate respirable air in it, whenever so circumstanced as to take in more than they can consume, and employ it whenever they are so situated as to need a larger supply. This hypothesis is favoured by the fact, that flying fish, as the *triglæ*, and, according to the researches of Humboldt, the *Exocœtus volitans*, are provided with ample air-bladders. De la Roche likewise remarked the organ very large in the *Scorpæna volitans*, whilst the species of the same genus that do not fly, (*Scorpæna porcus, scrofa, dactyloptera, &c.*) have it not. An ample air-bag is found, also, in the species of the salmon genus, the *Xiphias, pike, perch, herring, bichir, &c.* distinguished by the velocity with which they swim, whilst we meet with none in those fishes that are accustomed to remain at the bottom of the water, and whose movements are slow, as the *ray, Lophius, lamprey,* several *Blennii, Tæniæ, Echeneis, Cotti, Pleuronectes, &c.* It is also yet doubtful, whether the air-bladder should be considered, in addition, as an organ accessary to natation, so as, by its distention or contraction, to permit the fish to rise or sink in the water, as Borelli imagined. As several fishes, which are devoid of air-bags, are nevertheless good swimmers, and as, moreover, the organ does not always communicate with the pharynx and stomach by means of a duct that allows the air to pass out; and as it is, in the *Cobitis fossilis,* for example, occasionally inclosed in a bony capsule, which, consequently, does not allow it to dilate or contract, this opinion does not appear probable. It may also be alleged, that fishes, whose air-bags have been ruptured, have preserved the power of rising and sinking in water, as the experiments of Humboldt and Provençal have demonstrated." p. 313.

It will be obvious, however, that the want of a *ductus pneumaticus* is as unfavourable to the view which M. Tiedemann supports, as to the one against which it is adduced: moreover, the simple experiment of puncturing the air-bladder has often been performed *with* the effect of causing the animal to fall to the bottom, from which it was not subsequently able, by any exertion of its fins, to raise itself. These discrepancies environ the subject with difficulty. The eel, too, it may be remarked, which always resides at the bottom, has an air-bag, whilst the mackarel, which pursues its prey at the surface, has not this *balancing* organ, as it has been presumed, by some, to be.

In man, respiration or the arterialization of the blood is chiefly accomplished in the lungs, owing to their formation being so admirably adapted to the purpose; and it is probably not effected to any extent elsewhere, owing to the cuticle not readily permitting the absorption and exhalation of air. In many animals, however, the whole conversion can be accomplished through the skin. The air, which comes in contact with the common integuments, is found to undergo the same changes as that which enters the respiratory organs. The frog, salamander, and triton, at a low temperature, will remain for weeks and months in the water without breathing by the lungs; which they do not employ until the temperature reaches 50° of Fahrenheit. The cutaneous respiration would seem, indeed, to be of greater moment to these animals than the pulmonary. SPALLANZANI found, that frogs, whose lungs had been removed, lived longer than others whose skins had been smeared with oil, and similar results attended the experiments of Edwards. Respiration by the skin takes place likewise in the *Saurii*, *Ophidii* and *Chelonii*, according to the experiments of Spallanzani and Edwards. In the *Ophidii* and the *Chelonii*, pulmonary respiration suffices during summer, when the temperature is not too elevated; but the *Saurii* are compelled, in addition, to respire by the skin, and they die in summer, in the course of a few hours, if restricted to pulmonary respiration.

In the chapter *on the movement of the nutritive fluid*, or *on the circulation*, M. Tiedemann is the supporter of some singular positions. He affirms it to be, in his opinion, proved, that the movement of the blood is owing as well to the

"manifestations of activity in the parietes of the spaces in which the blood is contained, as to an inherent property in the living blood itself—that is, in the globules—of moving by its own impulsion: and that it seems, moreover, that the organs, the substance of which is undergoing perpetual change, exert on the blood an attraction, which likewise favours its movement."

These positions, he states, will be treated more amply under the circulation of the blood in man, but he offers some observations in the work before us, which will require a brief notice.

He properly regards the "irritable heart" as the chief agent in the propulsion of the blood into the arteries; and the stimulus, which excites the heart to contraction, he thinks to be the blood, "as Haller has sufficiently established by numerous experiments;"—the irritability of the heart continuing as long as the nutritious vessels convey arterial blood to its substance, but rapidly diminishing and being soon destroyed in a heart separated from the body.

Many of these views are by no means as clear as the author conceives them to be. On the contrary, Mr. Brodie found in some of his experiments, that when the heart was emptied of its blood it still contracted and relaxed alternately; and the experiments of Dr. J. K. Mitchell, detailed in a late number of this Journal, prove, in the most satisfactory manner, that the power of contractility can be excited to action by simple distention with gaseous fluids. A heart of the *Acipenser brevirostrum* was taken out and laid on the ground, and after a time, having ceased to beat, was inflated with the breath, for the purpose of drying it. Hung up in this state it began to move, and continued for ten hours to pulsate regularly, though more and more slowly, and when last observed in motion, the auricles had become so dry as to rustle when they contracted and dilated. The heart of a snake, when torn from the body, has been seen to continue its contraction for hours; and when the heart of an animal is separated from the body, it may be stimulated to contraction by being immersed in warm water, or pricked with a sharp-pointed instrument.

The arteries, the author thinks, consist of a peculiar fibrous membrane, and are extensible, elastic, and endowed with a vital power of contraction, not identical, however, with muscular irritability, and which he terms, with Parry, *tonicity.* The cause of the blood not flowing by pulses, but in a continuous manner, is owing, he conceives, to the force of impulsion from the ventricle being enfeebled by distending the arterial parietes: and the motion of the blood in the vascular radicles he attributes to the contractility of the arterial parietes; and to the property, possessed by the blood, of moving by its own impulsion. He seems to doubt whether the arteries terminate immediately in the veins, in the capillary circulation, or whether the

"currents of blood are surrounded by vascular parietes in their passage from the arteries to the veins, as Leeuwenhoek, Haller, Spallanzani, and others, aver-

> red; or whether they are only contained in canals excavated in the cellular tissue, as Gruithuisen, Döllinger, Carus, and others, have pretended;"

but he regards it to be an established fact, that at its first appearance in the *figura venosa* of the incubated egg the blood is not surrounded by vascular parietes.

The course of the blood along the veins is considered by M. Tiedemann to be owing to the constant flow from the arteries, the elasticity and vital contractility of the venous parietes, and to the active expansion of the auricles—the *suction power* or *derivation* of HALLER, WILSON PHILIP, CARSON, JUGENBUEHLER, SCHUBARTH, and others.

So far the physiologist may entirely accord with M. Tiedemann with regard to the forces that propel the blood, but it seems to us entirely inadmissible to ascribe any effective influence of this kind to the blood itself. The vital attraction exerted on the blood by the organs has probably some effect, but it cannot, perhaps, be great. The following is the author's views of the nature of this agency, which he promises more in detail when he treats, hereafter, of the circulation in man:—

> "If any part increases its action, either in consequence of an internal or external excitation, or by the influence of the nervous system, more blood is directed towards it. If any external part, the conjunctiva, for example, or a portion of the skin be mechanically stimulated, rubbed, exposed to an elevated temperature, or if an electrical spark be drawn from it, or if it be placed in contact with the two poles of a galvanic pile, the blood will immediately rush towards it in increased quantity, and it will become red. The same thing happens in the case of a wound. All the membranes, which secrete mucous or serous fluids, and all the secretory and other organs likewise admit more blood when stimulated. This cannot be attributed to augmented action of the heart, as that exerts its influence on the mass of blood only, and cannot modify the quantity of the liquid which passes to particular parts of the body. It seems rather to be owing to the organ, whose action becomes excited, experiencing more prompt changes in its material composition, and on that account attracting arterial blood more rapidly, and in greater abundance, this fluid being alone capable, by reason of its influence on nutrition, of rendering the part fit for deploying an increase of energy." p. 350.

The chapter on *nutrition* is almost wholly occupied by a disquisition on the supposititious *plastic force*, *force of nutrition*, *nisus formativus*, *&c.*—as it has been variously termed—to which we have already alluded.

The next chapter, and one of the most interesting in the work, is on the *secretion of the humours;* but it does not admit of analysis, being chiefly confined to a description of the various secretions—so numerous in animals—and of the different organs by which they are accomplished. The process M. Tiedemann considers to admit of no explanation based on principles of mechanics and chemistry, as the imaginary theories of the iatromathematical and iatrochemical schools have sufficiently demonstrated. It is an act of life, and can only be regarded as the effect of organic forces. This is correct as respects those secretions that require a true formation, or elaboration, but it does not appear necessary to invoke that agency in the case of fluids, which exist in the blood in the same state as after their secretion, and require simple transudation through the coats of the containing vessel—as the fluids which lubricate the serous membranes.

In the third division of his work, M. Tiedemann treats of the *disengagement of imponderable matters;* and his first chapter is on the *disengagement of heat in living bodies.* In this we have an excellent epitome of the results obtained by different observers regarding the temperature of animals—the mammalia, birds, reptiles, fish, and insects. On the different theories of calorification the author is extremely brief. He considers that the only point, which can be regarded as indisputable, is, that the disengagement of heat is a vital phenomenon, immediately dependent upon acts of nutrition which he esteems the "determining and conservative cause of life."

"The intussusception of alimentary matters and their assimilation by digestion and respiration, the circulation of the humours, nutrition, and secretion, the renewal of materials which accompanies the exercise of life, and the constant changes of composition in the solid and liquid parts, all of which are under the nervous influence, participate also in the production of heat, and we deceive ourselves when we look for the cause in one of these acts only. The intensity of the disengagement of caloric, and the faculty, possessed by animals, of maintaining themselves at a temperature proper to each species, are in a direct ratio with the composition of their organization, and the sum and intensity of their manifestations of activity. Birds and the mammalia which take their food after the shortest intervals; which digest most rapidly, consume most oxygen, and give off most carbonic acid; whose circulation is most energetic and rapid; which exhibit the most persistence in their movements; in which we observe the most intense effects on the part of the nervous system; which secrete the most various humours, and in which all the phenomena announce that the renovation of matter occurs in the most prompt and active manner, are those animals whose temperature is the most elevated, and which can maintain it most uniformly at a temperature peculiar to each. Reptiles, fish, insects, the mollusca and worms, whose structure is less complicated, whose vital phenomena exhibit less diversity, and in which the above-mentioned acts of life have less intensity, have a less degree of heat. They are liable to vary as regards their temperature, and their faculty of engendering heat is restricted within the narrowest limits." p. 515.

The two succeeding chapters—*on the disengagement of light in or-*

ganized bodies, and *on the electrical phenomena of living bodies*, are replete with interesting information on these topics of comparative physiology, and may be consulted, like every other portion of the work, with great advantage by the scientific naturalist.

The *phosphorescence* of animals, of which the author adduces all the examples with which we are acquainted, seems to him to be dependent upon a matter produced by the changes of composition that accompany life, and which appears to be secreted from the mass of humours by particular organs.

The "liquid" he thinks, probably contains phosphorus, or a similar combustible substance, which combines with the oxygen of the air contained in water at a medium temperature, and thus occasions the disengagement of light. The preparation and secretion of this substance are acts of life, that change, augment, or decrease by the influence of those stimulations from without, the action of which on animals modifies their vital manifestations. p. 549.

The phosphorescence itself, however, M. Tiedemann holds to be owing to the composition of the secreted matter, and not to be regarded as a vital act, inasmuch as at times it persists even for days after the death of the animal.

> "All that we can say, on the destination of the light in the economy of luminous insects, is, that the preparation and secretion of the luminous matter tends to the preservation of life in those animals. We shall not, however, deny that the light may permit the sexes to find each other more readily at the periods for copulation; as the males are observed to be attracted by shining objects. It may also, perhaps, serve to preserve them from the aggressions of certain enemies."

It must be admitted, however, that the ultimate end of this phosphorescent property is sufficiently inscrutable.

In the conclusion of the chapter on the *disengagement of light*, our author refers to the sparkling of the eyes of several mammalia—cats, dogs, wolves, foxes, martins, and other carnivora, as well as of the sheep, cow, and horse—which has been ascribed to a phosphorescent power. PALLAS thought that the light, in these cases, emanates from the nervous expansion in the eye, and he regarded it as an electrical phenomenon. B. PREVOST, however, found it to occur, in general, in those animals that are provided with a tapetum; and the experiments of Gruithuisen, Esser, and Tiedemann, have shown that the phenomenon never occurs when the light is totally excluded. Gruithuisen observed it in the dead as well as in the living animal. Tiedemann perceived it in a cat which had been decapitated for twenty hours, and it did not cease until the humours had become turbid. These facts, consequently, justify the conclusion, that the ocular brilliancy in those animals is owing to the reflexion of light from the inner layer of the choroid, and that it ought not to be reckoned phosphorescent.

All living bodies probably develope *electricity* to a greater or less extent, during the incessant changes of renovation and decomposition that are occurring through the whole period of existence. POUILLET affirms that he has observed a disengagement of electricity after the germination of plants. He placed in a chamber,—the air of which was kept sufficiently dry by means of quicklime—several pots of earth on an insulated stand, and in these he sowed different seeds. The stand was connected with a condenser. During the germination there was no indication of electricity; but scarcely had the seeds germinated when signs of electricity were perceptible, and when the young plants were in a complete state of growth, they communicated a charge to the condenser, which separated two leaves of gold half an inch asunder. Pouillet thinks, also, that plants develope electricity when they exhale carbonic acid gas, as the gas gives indications of electricity at the moment of its formation: and he conceives that the action of vegetables on the air is one of the chief sources of atmospheric electricity.

GALVANI was the first to point out, that when nerves and muscles are exposed in a living animal and brought into contact, contractions or convulsions occur in the muscles. He decapitated a living frog, removed the forepaws, and quickly skinned it. The spine was divided so as to leave the spinal marrow communicating only with the hind extremities by means of the lumbar nerves. He then took in one hand one of the thighs of the animal, and the vertebral column in the other, and bent the limb until the crural muscles touched the lumbar nerves. At the moment of contact the muscles were strongly convulsed. The experiment was repeated by VOLTA, ALDINI, PFAFF, HUMBOLDT, and others, and with like results. Aldini observed convulsions in the muscles by the contact of those organs with nerves, not only on the same frog, but also on two different frogs. He adds also that he remarked them when he put the nerves of a frog in connexion with the muscular flesh of an ox recently killed. Humboldt made numerous experiments of this kind on frogs. He found convulsions supervene when he placed upon a dry plate of glass a posterior extremity whose crural nerves had been exposed, and touched the nerves and the muscles with a piece of raw muscular flesh, insulated at the extremity of a stick of sealing-wax. Convulsions likewise occurred, when, instead of one piece of flesh, he used three different pieces to form the chain, one of which touched the nerve, the other the thigh, and the third the two others. The experiments were repeated by Ritter with similar results, but they are only found to succeed when the frogs are full of vital activity, especially in spring after pairing; when the animals are of sufficient size, and the preparation of the animal for the experiment has been rapidly accomplished. From these experiments it is inferred, that parts of an animal may form galvanic chains, and produce a galvanic effect, which, independently of any mechanical excitation, may give rise to the contraction of muscles. p. 560.

This excitation of electricity in chains of animal parts, M. Tiedemann concludes, ought not to be esteemed a vital act. Its effects only—the contractions excited in the muscles—are dependent on the vital condition of the muscles and nerves. He thinks, however, that the electricity, excited in chains of heterogenous animal parts, may be modified and augmented by the organic or living forces; and that, moreover, organs exist in certain animals, the arrangement of which is such as to excite electricity during their vital action—as in the electrical fishes, of the different species of which M. Tiedemann gives an interesting account, so far as regards the structure and functions of their electrical organs.

> "From the researches," he remarks, "hitherto made, regarding electrical fishes, it appears that the shocks which they give during life are of an electrical character, and more analogous to the effects of a voltaic pile than to any other phenomenon. The electro-motive organs, peculiar to these animals, exhibit also in their structure a great resemblance to one of those piles of the second class, inasmuch as they are composed of alternate layers of moist conductors of different nature: viz. of membranous disks, and of a gelatinous or albuminous fluid. It cannot, however, be admitted that their effects are solely owing to their structure,—to the mechanical arrangement of the parts which enter into their composition; for, after the section of the nerves that pass to the electrical organs, they immediately lose the power of giving shocks, although the heterogeneous strata, constituting them, may have experienced no change. The experiments of philosophers have as yet taught us nothing respecting the *modus operandi* of the indispensable nervous influence on the organs, or the part which it plays in exciting shocks. In this state of things we are compelled to consider the electrical charge and discharge of the organs as a vital act, which depends immediately on the influence of the nerves on those organs, and to look upon these as apparatuses, which concur in a secondary manner in the production and discharge of the galvanic electricity, under the vital coöperation of the nerves. It will be impracticable, however, to give an exact account of the mode in which the nerves act in exciting electricity, so long as we are

ignorant of the mode of action of the nervous force itself. The complete theory of these remarkable electrical phenomena can only be attained by fresh observations and researches on the manifestations of life in the nerves themselves. Sir Humphry Davy presumes, from his experiments, that animal electricity has more analogy with common electricity than with the voltaic, and it seemed to him more probable that it constitutes a distinct species of electricity." p. 580.

Several other phenomena, which, the author conceives; render it probable that the nerves of the animal economy, by virtue of an inherent force, are capable of exciting and conducting electrical currents, similar to those produced by the union of the poles of a galvanic pile, are merely alluded to by M. Tiedemann, as likely to fall under consideration in a subsequent part of his work. Our remarks upon them must, consequently, be postponed until another occasion. We may merely refer, at present, to the novel and ingenious view of MM. Prevost and Dumas on the agency of electricity in the production of muscular contraction. By means of a microscope, magnifying ten or twelve diameters, they examined the mode in which the nerves are arranged in a muscle; and found, that their ramifications always enter the muscle in a direction perpendicular to its fibres. They satisfied themselves that none of the nerves really terminate in the muscle; but that the final ramifications embrace the fibres like a noose, and return to the trunks that furnished them, or to others in their vicinity; the nerve setting out from the anterior column of the spinal marrow, and returning to the posterior. On further examining the muscles at the time of contraction, the parallel fibres composing them were found, by the microscope, to bend in a zigzag manner, and to exhibit a number of regular undulations; the flexions forming angles, which varied according to the degree of contraction, but were never under fifty degrees. The flexions, too, always occurred at the same parts of the fibre, and to them the shortening of the muscle was owing, as MM. Prevost and Dumas proved by calculating the angles. The angular points were always found to correspond to the parts where the small nervous filaments enter, or are attached to, the muscles. They therefore believed that the filaments, by their approximation, induce contraction of the muscular fibre; and this approximation they have ascribed to a galvanic current running through them, which, as the fibres are parallel, and very near each other, they think, ought to cause them to attract each other, according to the law laid down by AMPERE, that two currents attract each other when they move in the same direction.[*]

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[*] Dunglison, Vol. I. p. 313.

Soon after hearing of Ampere's discovery of this attraction of electrical currents, it occurred to Dr. ROGET, that it might be possible to render the attraction between the successive and parallel turns ot a heliacal or spiral wire very sensible, if the wires were sufficiently flexible and elastic; and, with the assistance of Mr. FARADAY, his conjecture was put to the test of experiment in the laboratory of the Royal Institution of London. A slender harpsichord wire, bent into a helix, being placed in the voltaic circuit, instantly shortened itself whenever the electric stream was sent through it, but recovered its former dimensions, the moment the current was intermitted. From this experiment it was deduced, that possibly some analogy might hereafter be found to exist between the phenomenon and the contraction of muscular fibres.

The last section of the work before us consists of an elaborate disquisition on the movements of organized bodies, in which the author enumerates the different movements of animals and vegetables, with the organs that execute them, and the circumstances under which they are effected. He then compares the movements of the two groupes of living beings, to discover in what points they are similar, identical, or different; and finally, he inquires into the causes and forces on which they are dependent, and whether they are accomplished by the same or by different forces.

The great vital force, according to M. Tiedemann, is that of *excitability*, by which he understands a property or faculty possessed by all living bodies, animals and vegetables—and by every part of these, even their germs—of being impressed by extraneous agents or influences, as well as by excitations produced within themselves, and of being excited by such influences and excitations to manifestations of action and to perpetual changes. This property he considers to be different in every animal tissue, and in every organ, all of which are solicited to action by special irritants, "according to the equally special constitution bestowed on them by the act of formation." The same applies to the vegetable. The cellular tissue, the different kinds of vessels, the roots, leaves, secretory organs, genital organs, flowers, pistil and stamina, are differently excitable according to their differences in structure, and the properties impressed upon them by the act of formation and development, and are impelled to the discharge of their functions by different excitations. It need scarcely be remarked that this excitability is communicated to the parts by the vital principle; that its essence is inscrutable; its agency passing all understanding; and that the adoption of the term "*plastic* *force*," which M. Tiedemann regards as the cause of this excitability does not render our darkness less impenetrable.

The last sections of the work relate to *contractility* as a vital property possessed by animals and vegetables; and by the different textures of the animal frame; but the absence of novelty, and the length to which this article has already extended, induce us to bring our analysis to a termination.

It has been already remarked, that the volumes before us can only be regarded as introductory to the great object of M. Tiedemann's undertaking, which is, as the title imports, a *Complete Treatise on the Physiology of Man*. They comprise, however, an excellent and copious register of facts on animal and vegetable physiology in general, and embrace a large portion of what may be called the *philosophy of organized existence*. On every topic the erudition of the author is conspicuous, and the facts and arguments of the most trusty observers are faithfully recorded with an industry which may be characteristically termed *German*.

We look forward with pleasing anticipations to the further progress of the work, and may be allowed to express a hope that M. Tiedemann will not follow the example of his distinguished countryman, Rudolphi, in permitting so long an interval to elapse between the publication of the separate parts, as occurred in the case of the *Grundriss der Physiologie* of that gentleman. Not the most unimportant evil attendant upon such a course is, that in a progressive science, like physiology, the earlier volumes are by no means fit representatives of the condition of the science at the period when the work is completed.

The impracticability of procuring the German original, has compelled us to confine our review to the French version. M. Jourdan is well known as a laborious translator into his own language of the works of the chief German writers on many portions of medical science; and his standing is at the same time elevated, amongst his countryman, as a learned and accomplished physician. We have no doubt, therefore, that justice has, in general, been done to M. Tiedemann in the version; although obscurities and tautologies occasionally occur, which would strike us as more properly chargeable, perhaps, to the translation than to the original. R.

ART. VII. *The Dispensatory of the United States.* By GEORGE B. WOOD, M. D. Professor of Materia Medica and Pharmacy in the Philadelphia College of Pharmacy; Member of the American Philosophical Society, &c. &c.; and FRANKLIN BACHE, M. D. Professor of Chemistry in the Philadelphia College of Pharmacy; one of the Secretaries of the American Philosophical Society. Philadelphia, 1833, pp. 1073.

THE irregular and apparently capricious manner in which most, if not all, the sciences have advanced in their career of usefulness and certainty, can scarcely have failed to have been noticed by the attentive observer. Their march has, in fact, been characterized by marked alternations of inactivity and rapid advances, or even in some instances, by retrograde movements. Neither has the progress of the whole been simultaneous; on the contrary, in every age some one has exercised an overweening influence, and after having enjoyed its sway for an indefinite period, gradually gave way to the increased popularity of another.

These remarks will also hold good as respects the different branches of the same science, and to none are they more applicable than to the pharmaceutic art, whose vicissitudes and alternate subjection to one or other of its kindred sciences are both interesting and instructive. It is also an extraordinary fact, that notwithstanding the great improvements which have been effected in this division of the medical art, that the value and practical utility of the records of these improvements should not have increased in an equal ratio. Thus too many of our Dispensatories instead of being a "chronicle of the times," present us with the opinions and learning of by-gone ages. Now, no science has been more modified by the lapse of years than that of pharmacy; and whatever may be our esteem and admiration of the precepts and doctrines of our forefathers, every day presents this art in aspects and circumstances of so different a character, as to render a consideration of its present state of paramount importance.

We, therefore, hailed with no inconsiderable pleasure the appearance of the Dispensatory of the United States, convinced from our knowledge of its authors, that it would prove a most valuable addition to our medical literature. We have not been disappointed in these expectations, and feel fully persuaded that it will take the first rank among works of this character.

We are for the first time presented with a Dispensatory in the English language, which is not a mere *rifacimento* of that of LEWIS, the general basis on which all subsequent publications of this nature have hitherto been constructed; added to and altered it is true, in many important particulars, but still retaining the strongest marks of the antiquity of their chief materials. We do not by this intend to say that the components of the present work are all, or in any proportion original, as from its very nature it ought necessarily to be constructed of such as had already been tested.

The duties of the authors of works of this description, are by patient industry and diligent research to gather in a small compass the experience and observations of others, however diffused through voluminous records, or floating in a traditionary form on the shoreless ocean of knowledge. To such a collection of materials they must apply the analytical and synthetical processes of judgment, selection and combination, so as to present their spirit and substance condensed into plain and practical results. These duties have been most satisfactorily performed by Drs. Wood and Bache, who have displayed in the accomplishment of their difficult task, a rare combination of untiring industry, extensive learning, and sound judgment.

The Dispensatory of the United States is divided into two parts, the first of which, and much the largest, is devoted to a consideration and description of the various articles of the materia medica; and the second to the various pharmaceutic preparations of these articles. The objects of the authors in their arduous undertaking are thus stated in their preface. After speaking of the Dispensatories of Duncan and Thomson, they observe that these works—

> "Were calculated especially for the sphere of Great Britain, and are too deficient in all that relates exclusively to this country, to admit of being received as standards here. In the history of our commerce in drugs, and of the nature, growth, and collection of our indigenous medical plants; in the chemical operations of our extensive laboratories; and in the modes of preparing, dispensing, and applying medicines, which have gradually grown into use among us, there is much that is peculiar, a knowledge of which is not to be gained from foreign books, and is yet necessary to the character of an accomplished American pharmaceutist."

This design has been accomplished in a far greater degree than could have been expected, even by the most sanguine; and we are presented with details respecting our drug markets, and the processes and products of our laboratories, that cannot fail to prove of extreme importance. In this almost untrodden field the authors have spared no labour or research, though it must be admitted that much, very much, yet remains to be effected; for in no part of the apothecary's business does there exist a more lamentable ignorance, than of the origin and distinction of closely allied articles of the materia medica. It must strike the merest tyro in the profession, that there are a vast number of articles constantly thrown into our drug market under a common appellation, whose origin, and even in some cases, whose properties are essentially different. Thus, under the names of gum Arabic, gum tragacanth, catechu, senna, and many others, we are presented with a variety of dissimilar articles. In making these observations, we do not intend to censure the authors for not having gone more fully into this subject; on the contrary, we have been highly gratified to perceive how much they have accomplished, in this laborious part of their undertaking. To perfect the task must require a long time, and the united and persevering efforts of many.

"The Pharmacopœia of the United States has been adopted as the basis of this Dispensatory. It is followed both in its general division of medicines, and in its alphabetical arrangement of them under each division. Precedence is, in every instance, given to the names which it recognises; while the explanations by which it fixes the signification of these names, are inserted in immediate connexion with the titles to which they severally belong. Every article which it designates is more or less fully described; and all its processes, after being literally copied, are commented on and explained, whenever comment or explanation appeared necessary."

"But though precedence has thus been given to the Pharmacopœia of the United States, those of Great Britain have not been neglected. The nomenclature adopted by the different British Colleges, and their formulæ for the preparations of medicines, have been so extensively followed throughout the United States, that a work intended to represent the present state of pharmacy in this country would be imperfect without them. The Pharmacopœias of London, Edinburgh and Dublin, have therefore been incorporated in all their essential parts into the present work. The medicines directed by the British Colleges are all described, and their processes either copied at length, or so far explained, as to be intelligible in all essential particulars."

This plan is the only one that can rescue pharmacy from the irregular and confused state in which it has existed in this country; and it is imperative on both physicians and apothecaries to take the United States Pharmacopœia as their text book, as far as practicable; for even granting that it is not as satisfactory as could be wished in all its details, still it is far superior to any work of the kind that has emanated from the American press. The science of pharmacy can never attain the rank to which its usefulness entitles it, without a consentaneous feeling among its votaries, and a firm determination to promote the general good, regardless of sectional feeling, or mere mercenary competition. At present, with the exception of those who have felt the ill effects of this want of uniformity, and have adopted the National Pharmacopœia as their guide, there is the most utmost discrepancy in the different sections of our country, not only in the nomenclature, but also in the strength of the different medicinal preparations. It is to be lamented that the proposal made by Van Mons in the preface to his Pharmacopœia, that there should be a convention of deputies from all the states of Europe, to establish an uniformity of pharmaceutical practice, had not been adopted; what an elevated station would pharmacy have now occupied, if the labours of all her votaries had been turned in one direction, instead of being, as they now are, diverted into so many different channels?

At the same time, we should be sorry to see any Pharmacopœia forced on the two professions by legal enactments; the observance of the receipts and directions of such a work should always depend upon their intrinsic excellence and general expediency, or else they will necessarily be contravened, whenever it is deemed fit and reasonable.

As we before mentioned, the United States Dispensatory is divided into two parts, or into a consideration of the articles in their simple and compound forms. The short and necessarily imperfect treatise on chemistry, which is subjoined to most works of this character under the title of Elements of Pharmacy, has been judiciously omitted; the addition of such matter only swelling a volume, without being of any positive utility. By thus treating on the different articles in their commercial and pharmaceutical states, all the directions which have reference to the practical operations of the apothecary are found in one place, and are of more ready access, than if mingled with other matters.

> "Under the head of materia medica, therefore, in this Dispensatory, we treat of medicines in the state only in which they are produced by nature, or come into the hands of the apothecary. Of these medicines, such as are recognised by our National Pharmacopœia are most minutely described; but we consider also all that are included in the officinal catalogues of the British Colleges, and some others which appear to deserve attention from their present form, or former reputation."

The authors have adopted an alphabetical arrangement, instead of attempting to class the different articles of the materia medica according to their supposed therapeutical or physiological effects on the human system; thus avoiding the difficult task of presenting a new classification of remedies, founded on the recent improvements in medical science, or of being obliged to consider the same substance under different heads, which although indispensable in a work on therapeutics is ill adapted for a book of reference; at the same time, when treating on each article, they have subjoined an account of its properties and remedial effects.

The plan pursued in describing the different substances is uniform; the officinal name being first given, which is as far as possible that recognised in the United States Pharmacopœia; this is followed by its English or vulgar name; next its definition, and its officinal synonymes in the three dispensatories of the British empire, to which is added its appellations in several foreign languages; these are succeeded by its classification as an object of natural history, with a succinct but well digested account of its habit, mode of growth, &c. We are then presented with its commercial history, properties and medical uses; this portion of the work is exceedingly valuable, and displays great research, acumen and judgment. To enable such of our readers, as have not seen the original to judge for themselves of the manner in which this is executed, we subjoin a specimen taken at random.

AMMONIACUM, *U. S.*, *Lond.*, *Ed.*, *Dub.*

Ammoniac.

"Heracleum gummiferum, Succus concretus. *The concrete juice.*" U. S.

"Gomme ammoniaque, *Fr.;* Ammoniak, *Germ.;* Gomma ammoniaco, *Ital.;* Goma amoniaco, *Span.;* Ushek, *Arab.;* Semugh velsherun, *Persian.*

"Much uncertainty has existed among botanists as to the plant which yields ammoniac. It was generally believed to be a species of *Ferula*, till Willdenow raised from some seeds mixed with the gum resin found in the shops, a plant which he ascertained to be an *Heracleum*, and named *H. gummiferum*, under the impression that it must be the true source of the medicine. On his authority, the plant has been adopted by the British colleges, and is recognised in our National Pharmacopœia. Willdenow expressly acknowledges that he could not procure from it any gum resin, but ascribes the result to the influence of climate. The *Heracleum*, however, does not correspond exactly with the representations given of the ammoniac plant by travellers; and Sprengel has ascertained that it is a native of the Pyrenees, and never produces gum. By this botanist it is named *H. pyrenaicum*, though before described by Lapeyrouse under the name of *H. amplifolium*. (*Merat and De Lens.*)

"Mr. Jackson, in his account of Morocco, imperfectly describes a plant indigenous in that country, supposed to be a species of *ferula*, from which gum ammoniac is procured by the natives; but it may be doubted whether its product is the true ammoniac of the shops, which is derived exclusively from Persia. Two English officers, Colonel Johnson and Captain Hart, have seen the real Persian plant, and given such imperfect accounts of it as might be expected from intelligent travellers, wholly ignorant of botany; M. Fontanier, a man of science, who was sent by the French government into the Levant, and resided many years in Persia, saw it growing in the province of Fars. By the last mentioned gentleman, a drawing of the plant with specimens was transmitted to Paris. From these it is inferred to be a species of ferula; and Merat and De Lens propose for it the name originally applied to it by

Lemery, of *F. ammonifera.* It would appear, however, from a very recent notice, that specimens of the plant obtained in Persia by Colonel Wright, and examined by Mr. David Don, prove it to belong to a genus allied to *Ferula*, but essentially different; and named by Mr. Don, *Dorema.* We are promised a description of it under the name of *D. ammoniacum*, in the transactions of the Linnæan society for the year 1831. (*Journ. de Pharm. Avril*, 1831.)

"The ammoniac plant grows spontaneously in Farsistan, Irauk, and other Persian provinces; in the southern districts of Arabia, and perhaps in the north of Africa. It attains the height of six or seven feet, and in the spring and early part of the summer abounds in a milky juice, which flows out upon the slightest puncture. From the accounts of travellers, it appears, that in the month of May, the plant is pierced by an insect of the beetle kind. The juice exuding, through the punctures, concretes upon the stem, and when quite dry is collected by the natives. M. Fontanier states that the juice exudes spontaneously, and that the harvest is about the middle of June. The gum resin is sent to Bushire whence it is transmitted to India. It reaches this country usually by the route of Calcutta. The name *gum ammoniac* is thought to have been derived from the temple of Jupiter Ammon in the Lybian desert, where the drug is said to have been formerly collected.

"*Properties.*—Ammoniac comes either in the state of separate tears, or in aggregate masses, and in both forms is frequently mixed with impurities. That of the tears, however, is preferable, as the purest may be conveniently picked out and kept for use. These are of an irregular shape, usually more or less globular, opaque, yellowish on the outside, whitish within, compact, homogenous, brittle when cold, and breaking with a conchoidal shining fracture.

"The masses are of a darker colour and less uniform structure, appearing when broken, as if composed of numerous white or whitish tears imbedded in a dirty-gray or brownish substance, and frequently mingled with foreign matters, such as seeds, fragments of vegetables and sand, or other earth..

"The smell of ammoniac is peculiar, and stronger in the mass than in the tears. The taste is slightly sweetish, bitter and somewhat acrid. The sp. gr. is 1.207. When heated, the gum resin softens and becomes adhesive, but does not melt. It burns with a white flame, swelling up, and emitting a smoke of a strong, resinous, slightly alliaceous odour. It is partly soluble in water, alcohol, ether, vinegar and alkaline solutions; more completely in the volatile oils, etherial spirit and ammoniated alcohol. Triturated with water, it forms an opaque milky emulsion, which becomes clear upon standing. The alcoholic solution is transparent, but is rendered milky by the addition of water. Braconnot obtained from 100 parts of ammoniac, 18.4 parts of gum, 70 of resin, 4.4 of a substance resembling gluten, (*bassorine,*) and 6 of water. The remainder was lost. A volatile oil, in minute proportion, is probably among the ingredients, as water distilled from ammoniac has its peculiar odour.

"*Medical properties and uses.*—This gum resin is stimulant and expectorant, in large doses cathartic, and like many other stimulants, may be so given as occasionally to prove diaphoretic, diuretic or emmenagogue. It has been employed in medicine from the highest antiquity, being mentioned in the writings of Hippocrates. The complaints in which it is most frequently used, are chronic catarrh, asthma, and other pectoral affections attended with deficient expectoration without acute inflammation, or with too copious secretion from the bronchial mucous membrane dependent upon debility of the vessels. It is thought to have been useful in some cases of amenorrhœa, and in those chlorotic and hysterical conditions of the system arising out of this complaint. It has also been prescribed in obstructions or chronic engorgements of the abdominal viscera, under the vague notion of its deobstruent powers. Any good which it may do in these affections, is more probably ascribable to its revulsive action upon the alimentary mucous membrane. Authors speak of its utility in long and obstinate colics dependent on mucous matter lodged in the intestines; but it would be difficult to ascertain in what cases such mucous matter existed, and, even allowing its presence, to decide whether it was a cause or a result of the diseased action. Ammoniaç is usually administered in combination with other expectorants, with tonics or emmenagogues. It is much less used than formerly. Externally applied in the shape of a plaster, it is thought to be useful as a discutient or resolvent in white swellings of the joints and other indolent tumours. (See *Emplastrum ammoniaci.)*

"It is given in substance, in the shape of pill or emulsion. The latter form is preferable, (See *Mistura ammoniaci.)* The dose is from ten to thirty grains.

"*Off. Prep.*—Emplastrum ammoniaci, *U. S.*, *Lond.*, *Ed.*, *Dub.* Emplastrum ammoniaci cum Hydrargyro, *Lond.*, *Dub.* Emplastrum gummosum, *Ed.* Mistura ammoniaci, *U. S.*, *Lond.*, *Dub.* Pillulæ scillæ compositæ, *Lond.*, *Ed.*, *Dub.*"

Such is the manner in which the authors have treated on the different articles of the materia medica, and although there is nothing new in the plan, it will at once be perceived by every one acquainted with the different dispensatories, that the present is much fuller and more precise in its details, and that the information conveyed is brought up to the present state of science. This in fact, is the great desideratum in a work of this character. The apothecary and physician have been in want of a book of reference to which they could confidently refer, for the latest improvements in science; the opinions of the early writers are now of little practical importance, however interesting they may be to the antiquary or man of letters.

As before observed, Drs. Wood and Bache have closely followed the National Pharmacopœia in their pharmaceutical nomenclature; which is certainly one of the best now used in such works, though even this, we think is deficient in many particulars. The attempt that has been made to adapt the language of pharmacy, to every change of names in chemistry and natural history has been of serious disadvantage, and has created confusion and uncertainty instead of the precision that was anticipated. Hence although the revisers of our National Pharmacopœia have done much, they did not go far enough, and instead making a radical reform, they have been content with partial alterations.

As an example of the evils attendant on an attempt to adapt the nomenclature of pharmacy to the constant changes which are daily made in the scientific names of other sciences, we need only advert to corrosive sublimate, which after having successively borne the appellations of *Murias hydrargyri corrosivus, Murias hydrargyri oxydatus preparatus, Hydrargyrum muriaticum corrosivum, Murias hydrargyri, Murias hydrargyri super-oxygenatus, Hydrargyri oxymurias, Deuto-chloruretum hydrargyri*, is finally presented to us as *Hydrargyrum chloridum corrosivum.* The same variations have taken place in the names of substances derived from the vegetable and animal kingdoms; thus the Spanish fly after having in turn been *Cantharis, Meloe*, and *Lytta*, is again permitted to assume the appellation of *Cantharis;* and Cardamoms has appeared in the different Pharmacopœias as *Amomum, Elettaria, Matonia*, and has now, and we hope finally, been found to belong to the genus *Alpinia.* On the other hand, substances derived from more than one vegetable are all referred to one species, and that perhaps a different one, according to the authority consulted.

This state of things has been strongly felt, and has engaged the attention of many distinguished men, among the rest HUFELAND has written an address to physicians on the necessity of adhering to the officinal name of drugs, a sentence from which we will quote as perfectly accordant with our own views on this subject. "Le mal est urgent, et menace de s'etendre de jour en jour. Il est tems d'y mettre un terme. Le remede est facile; il ne tient qu'a nous d'en faire usage, et j'ai cru devoir prendre la parole et de traiter la chose publiquement, afin de solliciter et d'obtenir l'attention et l'assistance de mes collegues. Il ne faut pour cet effet que la reunion de tous les medicins praticiens et académiciens, et de leur part l'engagement inviolable, de se servir dans leurs ordonnances que des anciens termes."

As, however, such a combination can scarcely be expected to take place, it is the more incumbent on those who appear as the leaders in pharmaceutical science, not to stop at half way measures, but to boldly adopt a uniform nomenclature and to adhere to it strictly, regardless of the changes that may occur in the phraseology of chemistry and natural history. Their example will sooner or later be followed, and we shall, at least, have a simple language, not overwhelmed with long lists of synonymes.

In turning over the pages of the United States Dispensatory, we made some notes and observations on what appeared new, or on which we differed from the learned authors; these are of course of a desultory character, as to attempt a critical analysis of each subject would require more time and science than we can bring to the task.

Acetum.—In the account of the manufacture of this article, we were surprised to find that the various methods by which vinegar is made in large quantities, both in this country and Europe in forty-eight hours to four days, have not been noticed. No inconsiderable proportion of the weak vinegars used for certain manufacturing purposes in this city, are made from a combination of potatoe juice, malt and whiskey.

Acidum arseniosum.—This is well treated on, but we are sorry that the authors were not able to avail themselves of the series of well conducted experiments on arsenic, and some of its compounds lately published by Dr. MITCHELL and Mr. DURAND, which correct many erroneous statements as regards the volatility, solubility, &c. of this perplexing substance. In their medico-legal observations on this and other poisons, we are glad to see that they extract largely from the excellent work of Dr. CHRISTISON.

Acidum muriaticum.—In retaining this name, instead of using the term *Acidum hydrochloricum*, the authors have followed other authorities, but we think they have conceded too much in this, particularly as they admit the compounds of chlorine and the alkalies under the appellations of chlorides, when in a dry state, whilst in solution, they term them muriates; this makes a confusion in the nomenclature that might have been avoided. Not that we object to the term *Acidum muriaticum*, for, as we before observed, we are of opinion that no good has resulted in pharmacy by change of names, but as the term chlorine is universally adopted, its compounds should also bear the family appellation.

Acidum nitricum.—The following correction of an error is important:—

> "We have stated above, that the red acid of the Edinburgh College is erroneously called nitrous acid. It is in fact, nitric acid holding nitric oxide in solution. Indeed, the acid of the other colleges is, to a certain extent, of the same nature, as it is generally yellow from the presence of a small quantity of the same gas. Real nitric acid is perfectly colourless. Nevertheless, it may be proper to add, that according to the equivalent numbers, if we suppose two equivalents of nitric acid, united to one equivalent of nitric oxide, the compound would correspond to three equivalents of nitrous acid."

Acidum oxalicum.—To the list of substances that contain this acid in considerable quantities, may be added the sumach, the efflorescence on the berries of which, is composed of super-oxalates, and malates of potash and limes.

Aloe.—This article displays great research and judgment on the part of the authors, and we should be tempted to lay it before our readers, were it not for its length. Do they not, however, go too far in saying, that "very little hepatic aloes comes to this country;" we have repeatedly met with it not only under this name, but also when of a good quality under that of socotrine.

Alumen.—The following may be new to most of our readers:—

> "Alum has not been an article of import into the United States since 1818, or a year or two earlier, the demand since then having been entirely supplied by the domestic manufacture. There are at present six establishments in the United States where alum is manufactured; namely, two in Baltimore, one in New York, and three in Massachusetts, at Salem, Roxbury and Newton. The aggregate quantity made in these works, may be estimated at from a thousand to twelve hundred tons. The method employed consists in the direct combination of sulphuric acid with clay. Lately, however, Messrs. Tyson and Ellicott, manufacturing chemists of Baltimore, have commenced working the ore found at Cape Sable, on Magothy river, Maryland. This ore, which was extensively worked during the late war, under the superintendance of Dr. Troost, consists of lignite, clay, sulphuret of iron and sand. It exists in beds of from six to ten feet in thickness, covered by a stratum of sand. It is dug up and thrown in heaps of from one to three thousand tons, is set on fire and continues to burn for years. The ashes are transported to the manufactory, where they are lixiviated and evaporated in leaden vessels. When the solution indicates about 25° of Baume's hydrometer, sulphate of potassa is added, after which it is drawn off to crystallize. At the end of about a week, the crystallization having been completed, the mother waters are pumped off, and the crystals, after being washed and drained, are dissolved in leaden boilers. From these the solution is transferred to the refining vessels, and left for about three weeks to crystallize."

Antimonium.—The authors have adopted, we perceive, the current belief, that it is to BASIL VALENTINE that we are indebted for the general introduction of this metal and its compounds as a medicinal substance; but it has been most satisfactorily proved that the *Carrus triumphalis antimonii* was not published till long after his death, and appears to have been written by a disciple of the celebrated PARACELSUS.

Argentum.—Under this head it is stated that the process for obtaining the silver from the ores is somewhat similar to that pursued at Freyberg; we have always been led to believe that it differed in almost every particular; at all events, the ores of South America have been more successfully worked by the natives, than by the German miners sent out there.

Asclepias.—We find it stated, the *A. incarnata* and *A. syriaca* possess properties similar to those of *A. tuberosa*, is not this an over-sight? the latter species is peculiar from its affording none of the acrid milky juice, so plentiful in the others, and which allies them to the apocynum in therapeutic effects.

Barytæ carbonas.—Is it not an error to say that it has not been found in the United States? Silliman, Vol. II. p. 374, on the authority of Rafinesque, states that it occurs in large quantities near Lexington, in Kentucky. The same remark may be made as regards bismuth; this metal being found at other localities besides that mentioned.

Brominum.—The account of this new medical agent is interesting, though we doubt if it will ever be extensively used; further experiments with it can only determine its true rank as a therapeutic agent. The bromide of iron, from what we have seen of it, appears exceedingly analogous in every particular to the hydrochlorate.

Calamus.—We observe that it is said this root "was in high repute among the ancients, and its virtues are celebrated in the works of Pliny and Dioscorides." What plant furnished the calamus of the ancients is extremely uncertain, and the research has occupied the attention of some of the most learned pharmaceutists of Europe, but as yet their labours have been attended with any thing but satisfactory results.

Lapilli cancrorum.—Under the names of crab's eyes, we not only find the gastric concretion spoken of, but also the calcareous opercula of some marine shells. This fraud is of no consequence, as the composition of both is almost identical.

Calcis chloridum.—This subject is ably treated on, though the later experiments on the chlorides of oxides have thrown much light on their composition and habitudes.

Chenopodium.—For medical uses there appears to be very little difference between the *C. anthelminticum* and *C. ambrosiodes*, and we know that they are indiscriminately used by the preparers of the wormseed oil.

Cahinca.—As this has never before appeared in our Dispensatories, and has attracted much attention from its reputed virtues in dropsy, it may be interesting to our readers to have a short abstract of the account of it given by Drs. Wood and Bache.

It appears that this medicine is furnished by several species of the genus Chiococca, all natives of South America; hence the external characters of it as found in commerce, are subject to slight variations. The root is the part employed. This is of a reddish-brown colour, and consists of cylindrical pieces, from the thickness of a straw to that of the little finger, somewhat bent or contorted, slightly striated longitudinally, presenting at certain distances small, irregular tubercles. The cortical portion, which is of a resinous character, has a bitter disagreeable taste, somewhat acrid and astringent; the ligneous portion is tasteless. The medical virtues of the root are almost exclusively confined to the cortical portion. They are extracted by water and alcohol.

Cahinca is tonic, diuretic, purgative and emetic. In Brazil it has long been used as an antidote against the bites of venomous snakes. But it owes its celebrity to its powers in the cure of dropsy, in which it is considered by some practitioners as superior to all other remedies. It is employed in substance, decoction, extract or tincture.

Cinchona.—The article on cinchona is more than usually extensive, and embodies a mass of information on the natural and commercial history of the drug of great interest and value, which we should be glad to transfer to our pages, were it not for its great length, we must therefore be content with recommending it as the most satisfactory account of this important drug, that has yet appeared. The same remarks are applicable to our authors description of the cinnamon, with which they have properly incorporated that of cassia, which, as it appears in our market, is certainly in many instances true cinnamon, added to which, there is no absolute criterion by which they can be separated, more especially as respects their medical properties.

Digitalis.—The following remark respecting this drug is worthy of attention, and is applicable to many of the more delicate vegetable remedies thus prepared. Much of the medicine kept in our shops is obtained from the settlement of the Shakers in New York, and is in the state of oblong compact masses, into which the leaves are probably compressed, before they are thoroughly dried; at least the cakes when opened are not unfrequently found to be somewhat mouldy. This mode of preparing the drug is highly objectionable, and it is not surprising that our practitioners are so frequently disappointed in its effects.

Euphorbia.—We would draw the attention of the authors to another native species of this genus, the *E. hypericifolia* which differs essentially in its properties from those described by them, and which if it should be found on a more extensive trial to warrant the eulogies bestowed on it, will be well worthy of a place in their next edition.

Ferri ferrocyanas.—With regard to the remedial properties of this article in intermittent fevers, we are more than sceptical, from the actual employment of it in the treatment of a great number of cases of this disease, during its prevalence several years since. In these instances the variety recommended by Dr. Zollickoffer was used. It has also proved inefficacious in the hands of many other practitioners in this city and elsewhere.

Fucus.—Instead of the *F. vesiculosus*, would it not have been more advantageous to have given the *F. helminthochortos*. The first of these has no peculiar advantage over any other marine plant containing iodine in small quantities, whilst the latter maintains a high rank among the European anthelmintics.

Gambogia.—A variety of this drug sometimes appears in our market, which betrays evidences of a different preparation, if not of a different origin from that described by Drs. Wood and Bache. This in cakes with a convex bottom, having a dull and granular appearance.

Ichthyocolla.—The following respecting the preparation of Isinglass in the United States will probably be new to most of our readers.

> "Isinglass of good quality is now obtained in New York, from the weak fish, and perhaps others caught in the neighbourhood. The sounds are dried whole, or merely slit open, and vary much in size and texture, weighing from a drachm up to an ounce. Another kind of inferior quality is prepared in New England, probably from the intestines of a fish. It is in the form of thin ribbands several feet in length, and from an inch and a half to two inches in width. It has been used to a considerable extent in this country, but is less soluble than the Russian, and affords a dark coloured solution."

The articles on *ipecacuanha* and jalap evince much research and discrimination, particularly the latter.

Litmus.—Cudbear is prepared not only from the *Lichen tartareus*, but also from many other species, which are not only procured in the north of Europe, but also in Labrador and other countries.

Manna.—From a recent account, it appears that another kind of manna has been discovered in New Holland, this is the product of the *Eucalyptus mannifera*, each tree of which produces several pounds. It resembles the manna of Europe except that it is less nauseabond.

The general observations on the fixed and volatile oils are useful, but we do not conceive that the rules given for the detection of the adulterations so often practised, particularly as regards the latter. This subject requires a close examination and repeated experiments.

Palm oil.—The authors are in all probability correct in attributing the origin of most of the palm oil used in the United States to the *Elais guiniensis*, though there is no doubt but that the *Elais (cocos) butyracea* and other species of palms also furnish some of that imported.

Oleum tiglii.—The authors have fallen into an error as respects the seeds furnished to them by Dr. Burroughs. These were not the produce of a different species of croton, but of the *Jatropha curcas*, which is also a native of South America.

Opium.—This article is copious and well drawn up, though we think that it is deficient in the descriptions of the various kinds of opium of commerce. Much interesting information on this head will be found in a memoir by M. Guibourt in the *Journ. de Pharm. Dec.* 1831.

Panax quinquefolium.—From the laborious investigations recently undertaken with regard to the ginseng, it appears that the root or roots so highly esteemed by the Chinese, are not furnished by the *Panax quinquefolium*, and that this article has been only used as a substitute for them. The authors should have noticed that considerable quantities of this drug are prepared for the Chinese market by being clarified, in which state it commands a higher price.

Prunus virginiana.—The wild cherry bark of our shops is derived not only from the *P. virginiana*, but also from the *P. serotina* a closely allied species.

Rheum.—We have been highly gratified with the manner in which this subject is treated, and are sorry that our limits will not permit our transferring it to our pages.

Rhus glabrum.—We perceive that the authors have inadvertently quoted Dr. Fahnestock of Lancaster as the author of articles in this Journal, on the medical effects of the *Rhus glabrum* and *Myrica cerifera;* this is an error, they are due to Dr. William M. Fahnestock of this city.

Madder.—From some late experiments of MM. Gaultier de Claubray and Persoz, it would appear that the colouring matters obtained by former chemists are not the true colouring principles of this drug. Instead of the alizarin and xanthin they have produced a red colouring principle differing from the former, and a splendid rose-coloured substance, that is likely to be very useful in the arts.

Scammonium.—We would advise an attentive perusal of the observations on the distinguishing marks of the different substances which come to our market under this name. As is observed, the Aleppo scammony seldom reaches us in its purest state; in confirmation of this remark of the authors, we would state that we searched the shops in this city in vain for an article answering to the description given of this article.

Senna.—This is admirably treated on, and will amply repay the reader for any attention he may bestow on it. We think, however, that the authors have adopted an erroneous plan in considering *Cassia fistula* and *C. marilandica* under the head of cassia, and the other officinal species under that of senna, it would have been better in every point of view to have classed the indigenous species with the sennas, by adopting Richard's genus *Cathartocarpus* for the *C. fistula*, or to have placed the sennas in Gærtner's genus of that name.

The second part of the work as before stated is devoted to the consideration of medicines in their compound form, and is of far more interest to the apothecary than to the physician, though it is replete with information that will be found useful to every medical man; our limits, however, will not permit us to attempt even a cursory examination of it at this time. We deem it due to the authors, at the same time to state, that as far as we have been able to judge, it bears the marks of the same research and discrimination as the first. It contains all the formulæ of the three colleges of Great Britain in addition to those of our own Pharmacopœia, with copious observations on the processes as well as on the medical properties of the preparations.

It only remains for us at present to speak of the mechanical execution of the work. With this we have no fault to find, the number of typographical errors are remarkably few for a treatise of this character, and are principally of such a nature, as to be of little essential consequence; the only objection we have is to its great bulk. That *sine qua non* of a book, the index, is extremely copious and well arranged.

In conclusion we have only to say, that we are fully convinced that no one that consults the pages of this work will be disappointed; whether his object be the acquisition of a general knowledge of the articles of the materia medica, or information on the complex manipulations of pharmacy. R. E. G.

Art. VII. *Change of Air, or the Philosophy of Travelling: being Autumnal Excursions through France, Switzerland, Italy, Germany and Belgium; with Observations and Reflections on the Moral, Physical, and Medicinal Influence of Travelling Exercise, Change of Scene, Foreign Skies, and Voluntary Expatriation. To which is prefixed Wear and Tear of Modern Babylon.* By James Johnson, M. D. Physician Extraordinary to the King. London, 1831. pp. 294. 8vo.

We take some degree of blame to ourselves for not having noticed the volume before us at an earlier period. Although intended, apparently, for the general reader chiefly, it embraces numerous topics of considerable interest to the physician, and on which he is often called to give an opinion, without being always conversant with all the bearings of the subject. How frequently, for instance, is he consulted by the anxious relatives of the consumptive regarding the comparative advantages of various climates;—the southern regions of our own states—the West India islands, or the south of France and Italy; and how often found totally unprepared to give a satisfactory answer? As regards those European countries, the author of the volume before us is capable of expressing himself from personal observation; and in the course of our remarks we shall take occasion to offer a few hints regarding the climate of different parts of this continent, which may serve, so far as they go, as elements for the guidance of the physician.

Dr. Johnson is, doubtless, well known to most of our readers as the able author of a treatise on the '*Diseases of Tropical Climates;*' and of various publications on subjects connected with his profession; but still more as the Editor of the *Medico-Chirurgical Review and Journal of Practical Medicine*—one of the most successful journals on medical science which have ever been published in Great Britain; more perhaps on account of its method of analyzing, and of the zeal and industry of the author in collecting and arranging facts, than from any unusual ability displayed in its pages. They, who have perused the treatise on tropical diseases, are familiar with the style and character of his writings, all of which indicate great good sense, but they are too frequently bedaubed and betinseled with tawdry ornament to a degree that becomes almost nauseating. The work before us is signally faulty in these respects. There is a perpetual straining after metaphor and meretricious embellishment, so that the mind becomes glutted in spite of the banquet of useful information spread before it; and notwithstanding the introduction of several old college acquaintances, with whom the reader was wont, at one time, to be sufficiently delighted, such as—"Gutta cavat lapidem non vi sed sæpe cadendo"—"Viresque acquirit eundo"—"O fortunatos nimium si sua bona norint"—"Quem Deus vult perdere prius dementat"—"Quicquid agunt homines, votum, timor, ira, voluptas"—"Expellas naturam furca tamen usque recurrit," &c. &c.

No opportunity for introducing a scrap of Latin or a quotation from a modern poet, is suffered to pass by. Shakspeare, Goldsmith, and Pope, appear to be the author's favourites, but he occasionally descends to less elevated bards, as where he asserts that—

> "The misery inflicted on the immense class of peripatetics in Paris, by the sharp stones of the pavé, continually reminds one of the tortures experienced by Peter Pindar's Pilgrim, while hobbling along the road—
>
> 'Damning the souls and bodies of the peas'
>
> With which his shoes were filled as a penance for his sins;"—

Where we have too evident indications of the train laid for the introduction of the line from honest Peter;—or when he affirms that—

> "In Geneva a pair of pattens and an umbrella serve for carriage and horses—while the housemaid, who has assisted to dress her mistress, performs the office of footman, in conducting her to the *soirée*. *There* conversation is enlivened and sweetened by music, tea, and bon-bons—the gentlemen, in groups, discussing foreign or domestic politics—while the stranger, from nine till twelve o'clock, has the supreme felicity to—
>
> 'Hear the pretty ladies talk
> Tittle tattle, tittle tattle,
> Like their pattens as they walk,
> Prittle prattle, prittle prattle.' "

Which description of Genevese society is too palpably introduced for the purpose of getting rid of this sublime effort of the muses, as no one is better aware than Dr. Johnson that the description is equally applicable to the society of every small town and village in Great Britain. Instead of looking upon these quotations as ornaments, we regard them to be undoubted blemishes, and by no means creditable to the author's taste.

As some evidence of his rage for what, in North Carolina, is not inappropriately termed *superflostication*, we may remark, that we have taken the trouble to count the scraps of poetry to be found in this small octavo, and we find that they amount to *one hundred and six!*

It is not our intention to follow the author in his "autumnal excursion," which affords much food for instruction and entertainment to the general reader, especially to travellers who have visited the countries he describes, or are about to do so. We can only select those topics, which are more particularly of a professional nature. The work is divided into three parts:—the first embracing the *influence of avocation and education on health, with a description of the salutary effects of travelling exercise:* the second comprising the *excursion, &c.;* and the third being devoted to the *influence—moral, physical and medicinal—of an Italian climate and Italian residence in sickness and in health.*

At the outset of the first part we have an elaborate description of "a condition or state of body and mind, intermediate between that of sickness and health, but much nearer the former than the latter," and which the author has quaintly yclept '*wear and tear complaint.*'

> "It is daily," he observes, "and hourly felt by tens of thousands in this metropolis, (London,) and throughout the empire; but I do not know that it has ever been described. It is not curable by physic, though I apprehend that it makes much work for the doctors ultimately, if not for the undertakers. It is that WEAR AND TEAR of the living machine, mental and corporeal, which results

from over-strenuous labour or exertion of the intellectual faculties, rather than of the corporeal powers, conducted in anxiety of mind and in bad air." * * * "It cannot be necessary to minutely describe that WEAR AND TEAR of the *moral and the physique,* which is too widely felt not to be readily recognised. The experienced eye detects it at a single glance in every street, in almost every habitation—in the senate and in the theatre—at the bar and at the altar—in the cabinet, the court: in short, in every spot where art, science, literature, or civilization can be found. One of the most striking features of this state is that which, indeed, would be, *a priori,* expected—PREMATURE AGE."

This premature age, with its accompaniments—a care-worn countenance, and a state of "etiolation or blanching" of the complexion, the author considers to be, amongst the thinking part of the community, symbols or symptoms of WEAR and TEAR of constitution, and he favours us with an episode to exhibit the "reciprocities of mind and body," or in other words, the powerful influence which they mutually exert upon each other. The following extract will show the notions he possesses regarding the effects of great intellectual and moral exertion.

"It is by the brain, or organ of intellect, that man is distinguished and raised above all other animals. The nerves of sense, by which impressions are conveyed to this organ, are not so acute in the lord of the creation as in many of the inferior orders of animated beings. He is surpassed by the eagle in sight—by the hare in hearing—and by almost all other animals in *taste.* But when the human species began to congregate in cities, it was soon obvious that the exertion of the *intellect* must predominate over that of the body. As civilization advanced, intellectual labour came more into demand, and the labourers multiplied in proportion. At the present period, as was before observed, the employment of a very large class of human beings, especially in cities, consists almost entirely of mental exertion. To such an extent is intellectual labour now arrived, that a very large and influential class of society live entirely, and support themselves honourably, by "teaching the young ideas how to shoot"—while others, who have no actual occupation, rack their minds with inventions, schemes, and projects, that fade away as fast as they are engendered.

"It is well known that the more a voluntary muscle is exercised, within a reasonable limit, the stronger and more capable of exertion it becomes. It is so with the intellectual faculties. The more these faculties are brought into play, *(within a certain bound of moderation,)* the more extensive becomes the sphere of their power. The senses of touch, smell, hearing, all acquire acuteness in proportion as they are exercised. But this extra development and sensibility of the intellectual faculties cannot take place but at the expense of some corporeal function or structure. An attentive examination of every class of society from the prime minister down to the attorney's clerk, will convince us that, in proportion as the intellect is highly cultivated, improved, and strongly exerted, the body suffers—till a period at length arrives, when the corporeal deterioration begins to reäct on the mental powers, and then proud man finds that the elasticity, even of the immortal mind, may be impaired by pressure too long continued—and that, like springs of baser metal, it requires occasional relaxation.

"Civilized, and more especially CIVIC life, by rendering the senses more acute, makes the passions more ungovernable. In congregated masses of society, every kind of food for the passions is not only superabundant in quantity, but of the most stimulating quality. Hence, in all the upper classes of society—in all indeed, who work with the head rather than with the hand—and also among those who have no work at all—we find an unnatural and insalutary degree of excitement kept up in the brain and nervous system by the "play of the passions." The extent of injury which our health sustains in this way is beyond all calculation! Plato was not very far wrong when he asserted, that "all diseases of the body proceed from the mind or soul:"—"omnia corporis mala ab anima procedêre." Unquestionably a very great proportion of them originate in this source. In this country, where man's relations with the world around him are multiplied beyond all example in any other country, in consequence of the intensity of interest attached to politics, religion, commerce, literature, and the arts—where the temporal concerns of an immense proportion of the population are in a state of perpetual vacillation—where spiritual affairs excite great anxiety in the minds of many—and where speculative risks are daily run by all classes, from the disposers of empires in Leadenhall Street down to the potatoe-merchant in Covent Garden, it is really astonishing to observe the deleterious influence of these mental perturbations on the functions of the corporeal fabric. The operation of *physical* causes, numerous as these are, dwindles into complete insignificance, compared with that of anxiety, tribulation, discontent—and I may add ENNUI of mind."

We cannot accord with Dr. Johnson in his estimate of the injurious effects of mental labour when carried only to the extent he describes. It has been our lot to be placed for a number of years amongst many whose intellectual meditations have been long and profound; and, as a general principle, they have appeared to us to be unusually healthy, and to present no more of those indications of what he calls the WEAR *and* TEAR *complaint*, than others whose avocations have been of a different character. It has indeed been often remarked, that the studious are more healthy and more longevous than their fellow men, and we have no doubt of the correctness of the affirmation. No country affords so long a list of laborious students, amongst the professors in its literary institutions, as Germany, yet they have been signalized for their longevity. The various concomitants of civic life to which the literati are much exposed—the late hours, the conversion of day into night, the indulgences of the table, and the crowded saloon, afford a more satisfactory explanation of the premature old age, the etiolation, &c. than the inadequate cause which the author has assigned. We would by no means assert that undue exertion of the mind never induces bodily disease, but we believe that such a result is less common than is imagined, and frequently the cause is far more manifest, although it may be consolatory to the friends of the sick to have the disease ascribed to such agency. The impure air of cities is proved to be positively injurious to man, by the much greater number of children who die there than in the country, and its agency in the production of effects, which the author has described as arising from other causes, is strikingly exhibited by the rapid improvement in the general feelings—in the *cœnæsthesis*, as the Germans calls it—the *corkiness* and buoyancy of the frame, and the ruddiness and clearness of the complexion, when the citizen breathes for a short time the pure, invigorating air of the country.

"Let any one," says the author, "who has a month to spare in the autumn, take his daily seat on the further extremity of the Chainpier at Brighton, and examine the features of the numerous faces which present themselves on the platform there. He must note the individual countenances. He will perceive these individuals, at first pale and sickly, gradually improve in their looks, and at length disappear—the chasms perpetually filled up by importations from MODERN BABYLON."

The salutary effects of travelling exercise are dwelt on at much length by the author, and as his descriptions may be looked upon as, in some measure, the experience of an invalid in search of health, they are, on that account, worthy of more attention.

"What I am going to say on this subject," he remarks, "is the result of direct personal experience and observation, in Europe, and in almost every quarter of the globe, unbiassed by any preconceived opinions derived from books or men."

After depicting the chief "*moral effects*" of travelling exercise, in producing a greater degree of serenity or evenness of temper than was previously possessed, and in removing depression of spirits or mental despondency, he thus describes the physical effects of the combination of mental and corporeal exercise resulting from travel upon the bodily functions:—

"The first beneficial influence of travelling is perceptible in the state of our corporeal feelings. If they were previously in a state of morbid acuteness, as they generally are in ill heath, they are rendered less sensible. The eye, which was before annoyed by a strong light, soon becomes capable of bearing it without inconvenience; and so of hearing, and the other senses. In short, morbid sensibility of the nervous system generally is obtunded, or reduced. This is brought about by more regular and free exposure to all atmospheric impressions and changes than before, and that, under a condition of body, from exercise, which renders these impressions quite harmless. Of this we see the most striking examples in those who travel among the Alps. Delicate females and sensitive invalids, who, at home, were highly susceptible of every change of temperature and other states of the atmosphere, will undergo extreme vicissitudes among the mountains, with little inconvenience. I will offer an example or two in illustration. In the month of August, 1823, the heat was excessive at Geneva and all the way along the defiles of the mountains, till we got to Chamouni, where we were, at once, among ice and snow, with a fall of 40 or more degrees of the thermometer, experienced in the course of a few hours, between midday at Salenche, and evening at the foot of the Glaciers in Chamouni. There were upwards of fifty travellers here, many of whom were females and invalids; yet none suffered inconvenience from this rapid atmospheric transition. This was still more remarkable in the journey from Martigny to the great St. Bernard. On our way up, through the deep valleys, we had the thermometer at 92° of reflected heat for three hours. I never felt it much hotter in the East Indies. At nine o'clock that night, while wandering about the Hospice of the St. Bernard, the thermometer fell to six degrees below the freezing point, and we were half frozen in the cheerless apartments of the monastery. There were upwards of forty travellers there—some of them in very delicate health; and yet not a single cold was caught, nor any diminution of the usual symptoms of a good appetite for breakfast next morning.

"This was like a change from Calcutta to Melville Island in one short day! So much for the ability to bear heat and cold by journeying among the Alps. Let us see how hygrometrical and barometrical changes are borne. A very large concourse of travellers started at day-break from the village of Chamouni to ascend the Montanvert and Mer de Glace. The morning was beautiful; but before we got two-thirds up the Montanvert, a tremendous storm of wind and rain came on us, without a quarter of an hour's notice, and we were drenched to the skin in a very few minutes. Some of the party certainly turned tail; and one hypochondriac nearly threw me over a precipice, while rushing past me in his precipitate retreat to the village. The majority, however, persevered, and reached the Chalet, dripping wet, with the thermometer below the freezing point. There was no possibility of warming or drying ourselves here; and, therefore, many of us proceeded on to the Mer de Glace, and then wandered on the ice till our clothes were dried by the natural heat of our bodies. The next morning's muster for the passage over the Col de Balme showed no damage from the Montanvert expedition. Even the hypochondriac above-mentioned regained his courage over a bottle of Champagne in the evening at the comfortable 'Union,' and mounted his mule next morning to cross the Col de Balme. This day's journey showed, in a most striking manner, the acquisition of strength which travelling confers on the invalid. The ascent to the summit of this mountain pass is extremely fatiguing; but the labour is compensated by one of the sublimest views from its highest ridge, which the eye of man ever beheld. The valley of Chamouni lies behind, with Mont Blanc and surrounding mountains apparently within a stone's throw, the cold of the Glaciers producing a most bracing effect on the whole frame. In front, the Valley of the Rhone, flanked on each side by snow-clad Alps, which, at first sight, are taken for ranges of white clouds, presents one of the most magnificent views in Switzerland, or in the world. The sublime and the beautiful are here protended before the eye, in every direction, and in endless variety, so that the traveller lingers on this elevated mountain pass, lost in amazement at the enchanting scenery by which he is surrounded on every point of the compass. The descent on the Martigny side, was the hardest day's labour I ever endured in my life—yet there were three or four invalids with us, whose lives were scarcely worth a year's purchase when they left England, and who went through this laborious, and somewhat hazardous descent, sliding, tumbling and rolling over rocks and through mud, without the slightest ultimate injury. When we got to the goat-herds' sheds in the valley below, the heat was tropical, and we all threw ourselves on the ground and slept soundly for two hours—rising refreshed to pursue our journey.

"Now these and many other facts which I could adduce, offer incontestible proof how much the morbid susceptibility to transitions from heat to cold—from drought to drenchings—is reduced by travelling. The vicissitudes and exertions which I have described, would lay up half the effeminate invalids of London, and kill, or almost frighten to death, many of those who cannot expose themselves to a breath of cold or damp air, without coughs or rheumatisms, in this country.

"The next effect of travelling which I shall notice, is its influence on the organs of digestion. This is so decided and obvious, that I shall not dwell on the subject. The appetite is not only increased; but the powers of digestion and assimilation are greatly augmented. A man may eat and drink things while travelling, which would make him quite ill in ordinary life.

"These unequivocally good effects of travelling on the digestive organs, account satisfactorily for the various other beneficial influences on the constitution at large. Hence dyspepsia, and the thousand wretched sensations and nervous affections thereon dependent, vanish before persevering exercise in travelling, and new life is imparted to the whole system, mental and corporeal. In short, I am quite positive that the most inveterate dyspepsia, (where no organic disease has taken place,) would be completely removed, with all its multiform sympathetic torments, by a journey of two or three thousand miles through Switzerland, Germany, or any other country, conducted on the principle of combining active with passive exercise in the open air, in such proportions as would suit the individual constitution and the previous habits of life.

"There is but one other effect of travelling to which I shall allude, before I close this section; but I think it is a very important one—if not the most important of all. It is the influence which *constant change of air* exerts on the blood itself. Every one knows the benefits which are derived from change of air, in many diseases, when that change is only from one part to another, a few miles separated. Nay, it is proved, beyond all possibility of doubt, that the change from what is considered a good, to what is thought a bad air, is often attended with marked good effects. Hence it is very reasonable to conclude, that the *mere change* of one kind of air for another has an exhilarating or salutary effect on the animal economy. It is true, that we have no instruments to ascertain in what consists this difference of one air from another, since the composition of the atmosphere appears to be nearly the same on all points of earth and ocean. But we know, from observation, that there are great differences in air, as far as its effects on the human frame are concerned. Hence it would appear that the individual, confined to one particular air, be it ever so pure, languishes at length, and is bettered by a change. The idea is supported by analogy. The stomach, if confined to one species of food, however wholesome, will, in time, languish and fail to derive that nutriment from it, which it would do, if the species of food were occasionally changed. The ruddy complexion then of travellers, and of those who are constantly moving from place to place, as stage-coachmen, for example, does not, I think, solely depend on the mere action of the open air on the face, but also on the influence which change of air exerts on the blood itself in the lungs. I conceive, then, that what Boerhaave says of exercise, may be safely applied to change of air. 'Eo magis et densum, et *purpureum sanguinem esse*, quò validius homo se exercuerit motu, musculorum.' It is to this *constant change of air*, as well as to the constant exercise of the muscles, that I attribute the superiority of the plan of travelling which I have proposed, over that which is usually adopted—where HEALTH is the entire object. On this account, I would recommend some of my *fair* countrywomen, (who have leisure as well as means,) to improve the languid states of their circulation, and the delicacy, or, more correctly speaking, the pallor of their complexions, by a system of exercise in the open air, that may give colour to their cheeks, firmness to their muscles, tone to their nerves, and energy to their minds."*

The following remark we consider altogether hypothetical:—

"The other effect of travelling is very curious, and has not been noticed, so far as I am acquainted, by any writer. It is this—that the exercise of body, taken on the road, or while wandering about seeing objects of curiosity, is not favourable to intellectual operations. It is probable that a high range of health, indeed, is incompatible with the most vigorous exertion of the mind, and that this last both requires and *induces* a standard of health somewhat below par. It would not be difficult to show that the majority of those who have left behind them imperishable monuments of their intellectual powers and exertions, were people of weak bodily health. Virgil, Horace, Voltaire, Pope, and a thousand others might be quoted in illustration."

This inference, from insufficient data, appears to have been suggested by a circumstance which admits of easy explanation; for he adds—

"Be this as it may, it is certain that travelling exercise, while it so much improves all the bodily functions, unhinges and unfits the mind, *pro tempore*, for the vigorous exercise of its higher faculties. I much doubt whether the immortal effusions of Byron were penned immediately after the impressions were made on his mind by the Rhine, the Alps, the lakes of Helvetia, the ruins of Italy and Greece, with all their classical and historical associations. But the first excitement being over, the memory of scenes and circumstances, together with the reflections and recollections attendant thereon, furnish an ardent mind with rich materials and trains of thought, that may, by gifted individuals, be converted into language, and thus conveyed to thousands."

We regard this effect of travelling exercise, in unhinging and unfitting the mind for the vigorous exercise of its higher faculties, as in no respect connected with its improving "all the bodily functions." It is to be explained by the simple fact, that whilst in a rapid journey, the sensations are kept vividly engaged, the mind is altogether occupied in the reception of ideas, and no time is permitted for the exertion of the 'higher faculties.' But every one who has dwelt in a romantic region will admit that a residence in such a situation adapts the mind for loftier flights of the intellect, than one which furnishes no food for contemplation, or for mental elevation. All this, however, is independent of any corporeal effect of travelling.

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* "Dr. Johnson on Indigestion."

On his road to Italy, Dr. Johnson passed through the Valais, and through its capital, Sion. This gives occasion to some observations on *goître* and *cretinism*—those singular affections dependent upon locality, but upon what peculiar combination of local causes we know no more than we do of the causes productive of endemic disease in general. On these the author gives us no information, but he presents a lamentable picture of the moral and physical abjection of the inhabitants of the Valais generally, and of Sion in particular.

> "I explored this town," he remarks, "with great attention, traversing its streets in every direction; and I can safely aver that, in no part of the world, not even excepting the Jew's quarter in Rome, or the polluted back lanes of Itri and Fondi, in the kingdom of Naples, have I seen such intense filth! With the exception of two or three streets, the others present nothing on their surface but a nameless mass of vegeto-animal corruption, which, in all well-regulated towns, is consigned to pits, or carried away by scavengers. The alleys are narrow; and the houses are constructed as if they were designed for the dungeons of malefactors, rather than the abodes of men at liberty."

The remarks on the causes of cretinism and goître are possessed of little or no novelty. It seems that in the Valais, and in the lower gorges or ravines that open on its sides, both cretinism and goître exist in the most intense degrees, that as we ascend the neighbouring mountains cretinism disappears, and goître only is observed—and that when a certain altitude is attained both maladies vanish, and the inhabitant of the Alpine regions exhibits the characters of the resident of the most salubrious districts.

The author doubts the assertion of travellers, that cretinism is on the decrease.

> "The diminution," he observes, "is, I fear, more apparent than real. The 'march of intellect,' and the intercourse with strangers have taught the parents and friends of these wretched creatures to doubt that the cretin is the favourite of Heaven, as is thought of idiots in Turkey. They therefore conceal, rather than expose, their offspring so afflicted. I saw them driving them in from the back streets of Sion on my approach. It is probable, however, that there is a diminution in the number of cretins in the Valais. Many of the auxiliary causes

are on the decline. The people are becoming more sober, more industrious, more cleanly. Those who can afford the expense, also, send their children up into the mountains to check the tendency to cretinism."

In journeying through the Milanese, Dr. Johnson had an opportunity of witnessing that peculiar affection, which has sprung up in the Lombardo-Venetian plains within the last one hundred years, and appears to be rapidly on the increase, so that, at this time, according to our author, a sixth or a seventh of the population is affected in those parts of the country where it is most prevalent. We allude to the loathsome *Pellagra*, which is thus described by him.

"It begins by an erysipelatous eruption on the skin, which breaks out in the spring, continues till the autumn, and disappears in the winter—chiefly affecting those parts of the surface which are habitually exposed to the sun or the air. This cutaneous symbol of an internal disorder is accompanied or preceded by remarkable debility, lassitude, melancholy, moroseness—hypochondriacism—and not seldom a strong propensity to suicide. Year rolls on after year, and the cutaneous eruption, as well as the general disorders, become more and more aggravated, with shorter and shorter intervals in the winter. At length the surface ceases to clear itself, and becomes permanently enveloped in a thick, livid, leprous crust, somewhat resembling the dried and black skin of a fish! By this time, the vital powers are reduced to a very low ebb—and not seldom the intellectual functions. The miserable victim of this dreadful pellagra loses the use of his limbs, more particularly of the inferior extremities—is tormented with violent colic, head-ache, nausea, flatulence and heartburn—the appetite being sometimes null, at others voracious. The countenance becomes sombre and melancholy, or totally void of expression—the breath fetid—the teeth rotten—the inside of the mouth ulcerated—the mucous membrane highly irritable, and diarrhœa is a common accompaniment of the other disastrous train of miseries. But the most distressing phenomenon of all is a sense of burning heat in the head and along the spine, from whence it radiates to various other parts of the body, but more especially to the palms of the hands and soles of the feet—tormenting the wretched victim day and night, and depriving him completely of sleep! He frequently feels as if an electric spark darted from the brain, and flew to the eyeballs, the ears, and the nostrils, burning and consuming those parts. To these severe afflictions of the body are often added strange hallucinations of the mind. The victim of pellagra fancies that he hears the incessant noise of millstones grinding near him—of hammers resounding on anvils—of bells ringing—or the discordant cries of various animals! The disease, when advanced, takes the form of many other maladies, as tetanus, convulsions, epilepsy, dropsy, mania and marasmus—the patient ceasing at last to exist and to suffer, when reduced to the state and appearance of a mummy. It is by no means uncommon—who can say it is wonderful—that the wretched being abbreviates the term of his afflictions, and anticipates the too tardy hand of death in a paroxysm of suicidal mania! It is remarkable that this tendency to self-destruction very often assumes the form of a desire to consummate that last act of the tragedy by drowning—so much so that STRAMBI, a writer on the pellagra, has given it the name of HYDROMANIA, when this propensity exists."

The cause of this affection, according to our author—

> "Is just as inscrutable as the causes of hepatitis on the coast of Coromandel, elephantiasis in Malabar, Beriberi in Ceylon, Barbadoes leg in the Antilles, goître among the Alps—the plica in Poland—cretinism in the Valais—or malaria in the Compagna di Roma;"—

Or, the author might have added, of any endemic, epidemic or contagious affection, for our ignorance is extreme regarding the causes of any and of all. Yet hypotheses, as on every occult subject, have been numerous. Pellagra has been ascribed to humidity, to defective nourishment, to insolation, to filth, and,—what seems strange to an inhabitant of this continent,—to the use of Indian corn. "Professor Spedalieri, of Pavia," says M. Valentin, in his *Voyage Médical en Italie, fait en l'anneé* 1820, "informed me that some of the inhabitants of the country a few miles from Bologna, where he was residing, having made use of corn bread, *(Pain de maïs—Zea mays,)* during a period of scarcity, were attacked with the pellagra. The affection had never been seen there before, and when the cause ceased, the effect disappeared also." It is due, however, to M. Valentin to remark, that he does not believe in this assigned cause. He must, indeed, have had numerous opportunities, when in this country, for observing that the disease does not follow the use of corn to any extent whatever. The other causes assigned are palpably insufficient to account for it, and we are compelled to do that, which is one of the most difficult accomplishments for the physician to attain—to express our total ignorance of the matter. Valentin asserts that pellagra bears no analogy to lepra, elephantiasis or herpes, and that it is not contagious. "When uncomplicated, it is cured by rest, good living, wine, bathing, and by emigrating at the onset."

On the subject of *malaria*—the 'fitful pest' which desolates the fairest portions of Italy, and which is so intensely interesting to the physician, and to the inhabitants of many districts of our own country, Dr. Johnson offers absolutely nothing, which is not familiar to most of our readers. Like every judicious writer on the subject, he expresses his unqualified ignorance of its nature and cause. He alludes to certain of its laws, which are well known, but, like most recent writers on malaria, he is disposed, we think, to refer many diseases to its agency, where the relation between cause and effect seems to us to be extremely obscure, and more than equivocal. What evidence, for example, have we, that tic douloureux is owing to any malarious emanation, as is maintained by the author in the following extract, as well as by Dr. Macculloch and others? The last mentioned writer on the whole subject of malaria, appears to have pushed his views to the most visionary extent. In an article published in the 72d number of the *Edinburgh Review*, and which was ascribed, correctly we have no doubt, to that gentleman, it was gravely asserted that "whenever it, (the miasm,) occurs in this city, (Edinburgh,) where it is now rare, the poison, we have little doubt, is transported from Holland;" in other words, that it emanated in Holland, is borne undiffused some hundreds of miles across the ocean, passes over intermediate districts, and singles out the Scotch metropolis for its devastations. Since the appearance of that strangely hypothetical essay, the same gentleman, as our readers know, has published an *ex professo* treatise on malaria and the diseases produced by it, in which he includes fever, apoplexy, lethargy, coma, paralysis, epilepsy, hysteria, asthma, palpitation, mania, hypochondriasis, dyspepsia, nervous disorders, atrophy, hepatitis, rheumatism, dysentery, pellagra, goitre, tic douloureux, and the whole tribe of neuralgic complaints!

The opinions of Dr. Johnson on this subject are expressed in a style peculiar to the author, and exhibit his wonted effort at the grandiloquent and typical.

"From some acquaintance with the effects of malaria or vegeto-animal effluvia (?), on the human constitution, both at home and abroad, I venture to affirm that this invisible poison is a very fertile source of obscure but harassing disorders. I have already said that one of its characteristics is the slowness or insidiousness of its effects. Another, and still more characteristic feature of malarious disorders, is their alternations of activity and repose—in other words, the periodicity of their accessions and remissions. They love to prolong the life of their victim, in order that he may die a series of deaths—like the eastern tyrants, who protract the immolation of the criminal by dropping water from a height on his naked head.

"The class or tribe of malarious maladies comprehends numerous families. At the head of one of them stands the foul TERTIAN fiend, distinguished by the peculiarity of his warfare on the human race—a regular series of attacks and retreats. The sufferer is thus harassed, but held up by alternate days of sickness and health, till the TERTIAN FIEND delivers him over to two of his merciless offsprings, LIVER and DROPSY, who finish the tragedy of life. These are the victims of malaria which meet the eye in all parts of the Campagna, Maremma, Pontines, and many other insalubrious localities of fair Italy.

"At the head of another tribe of miasmal afflictions, stands one of the most terrible enemies of human nature. Unlike the TERTIAN FIEND, he gives no warning of his approach, no clue to the probable periods of his attack. The invisible and poison-pointed dagger is plunged, without notice, into those parts of our organization where sensibility is most acute, and, consequently, where pain is most agonizing! The stroke is repeated without remorse, and without the merciful humanity of quickly destroying its victim, who is reserved for years of torture and long protracted despair! Need I say that this destroying angel is TIC DOULOUREUX. It is a product of malaria; but fortunately, in this its highest grade, it is not a very common malady. The inferior branches of this family, however, are exceedingly numerous, even in our own country, comprehending all the forms of chronic rheumatism, sciatica, face-ache, clavus hystericus, and the whole of the neuralgiæ, or wandering and periodical pains, dolorous sensations, &c. for which names have not yet been invented.

"The offspring of malaria and certain morbific agencies conjoined, as intemperance, moral afflictions, and other ills of life, would require volumes for their elucidation. As malarious exhalations act strongly and injuriously on the digestive organs and the nervous system, the range of their influence is wide beyond all calculation. One general character, however, appertains to all the disorders connected with a malarious origin—PERIODICITY, or remissions and exasperations. Whenever this phenomenon, (periodicity,) shows itself, malaria should be suspected; and those countries or localities which are infested by this destructive agent should be avoided. The misfortune is, that both in England and Italy, the poison is often introduced into the constitution, in doses so minute, that no immediate effect is produced, especially while the excitement of novelty, and the exhilaration of travelling last. When these are over, the penalty of *residence* in malarious countries will, sooner or later, be paid; though, even then, by sufferings, which are rarely traced or attributed to their real origin. Their nature being mistaken, the treatment is ineffectual; and health is sacrificed! But, as I shall have occasion to touch on this subject again, when speaking of the medicinal effects of an Italian climate, I shall bring this section to a close."

The difficulty of tracing effects to their causes is proverbially great; but nothing can be more obscure than the relation between the diseases and the cause assigned in this extract. The fallacy of the author's views doubtless consists in regarding all diseases, that are of a periodical character, as caused by malaria, because intermittent fever is. The experience of our own country, fertile in many of its districts in malaria, and that often of a most virulent kind, will not sanction the assertion, that tic douloureux is of malarious origin, or that all diseases, characterized by periodicity, should lead to the suspicion of malarious influence. It is difficult to attain exact statistical information on such subjects, but we are satisfied of the accuracy of our statement, when we affirm that tic douloureux and many of the affections enumerated by Dr. Macculloch, and apparently assented to by Dr. Johnson, cannot be regarded as malarious in the ordinary acceptation of the term. We should have regarded it as an equally plausible hypothesis, had they referred some of the functions of the frame that are executed periodically in health, to malarious influence. The rage for generalization, which prevails at the present day in medicine, as it does in some of the collateral sciences, has occasionally led to much erroneous speculation and deduction.

The picture which the author draws of the miserable physical and moral condition of the inhabitants of the Campagna di Roma, and of those other districts, where the malaria emanates in fatal abundance and virulence, is melancholy in the extreme. Some idea may be formed of the extent of malarious influence from the statement given by Valentin of the quantity of cinchona annually consumed in Rome and its environs. According to an estimate obtained by that gentleman from the *Dogana*, or Custom-house, not less than 10,200 pounds, (12 ounces to the pound,) are annually imported; the consumption of which is as follows:—

At the hospital of the Holy Ghost - - - - -	4,000
At that of Saint John - - - - - - -	2,000
In other hospitals - - - - - - - -	500
In the *Pharmacies* of the town - - - - - -	200
In the neighbouring towns - - - - - -	3,500
	10,200

a quantity which appears almost incredible!

The second portion of the work, which, by the by, is characterized throughout by the most exclusive Anglican feeling, furnishes no other topic particularly deserving of comment. We pass on, therefore, to the third part—on "the influence, (moral, physical and medicinal,) of an Italian climate and residence in sickness and in health"—the most interesting portion of the work to the physician. We do not intend to follow the author in his *ultra* views of the "moral influence," which, we regret to see, exhibit undue and unworthy prejudice against the manners and religion of the people. Our remarks will be restricted to the two last "influences."

The climate of Italy is now better understood than it was formerly. The tours of the different travellers, and the excellent work of Dr. James Clark, have satisfactorily shown, that it is one of great vicissitudes, and but little adapted for the invalid, particularly for such as may be labouring under pulmonary disease. But let us hear what Dr. Johnson says on this subject.

> "Italy, indeed, is very singularly situated in respect to climate. With its feet resting againt the snow-clad Alps, and its head stretching towards the burning shore of Africa, it is alternately exposed to the suffocation of the sirocco, from the arid sands of Lybia, and the icy chill of the tramontane from the Alps or the Apennines. The elevated ridge of mountains, that bisects the whole of Italy longitudinally, operates powerfully in modifying her climate.
>
> "Against the summits of this rugged and lofty chain of Apennines the sea-breeze that has swept the Mediterranean, or even the Atlantic Ocean, on one

side, or the Adriatic on the other, strikes often with great violence; but is, on the whole, impeded in its course—more especially the lower strata of air—hence the stillness of the atmosphere so remarkable at ROME and many other parts of the western plains and valleys of Italy. This stillness is by no means advantageous, in point of salubrity, to a country where deleterious exhalations are hourly issuing from the soil in the summer season, and which are dissipated by winds and concentrated by calms. Thus, then, this Apennine ridge affords no protection from the chilling blast of the Alps, or the enervating sirocco of Africa; while it diminishes the utility, by obstructing the current of sea-breezes, from whatever point they may blow. But the Apennines themselves, when they annually resume their caps of snow, become the source of most piercing and cutting winds, more chilling than those from the Alps, on account of their greater proximity to the plains. The Apennine, therefore, is one of the agents which produce those excessive transitions of temperature, to which the atmosphere of Italy is subjected.

"The belt of ground, or series of plains and valleys, on the western side of the Apennines, is very differently circumstanced from that on the eastern. The lime-stone stratum, on the Adriatic side, is prodigiously thick; and prevents the issue of subterranean fires, in the form of volcanos. The stratum covering the primitive rock, on the western side of the Apennines, is infinitely less dense. No vestiges of volcanos have ever been found on the Adriatic declivities—while the western slope, on which all the great cities are built, presents craters in abundance. The geology of the Roman environs, and of Italy generally, shows, *first*, the operation of some tremendous subterranean fire that hove up the Apennines themselves;—*secondly*, the operation of the sea on all the grounds lower than the Apennine ridges;—*thirdly*, the operation of fire again, in heaving up and disrupting the marine depositions;—*lastly*, the operation of stagnant *fresh waters*, as evinced by the various depositions from that source. In Rome and its immediate neighbourhood, the operation of the last three causes has been clearly traced by Leopold, Von Buch, and others.

"From the relative situation, then, of the Alps, the Apennines, and the sands of Africa, it may be said that almost every breeze in Italy comes over a volcano or an iceberg—and, consequently, we are alternately scorched by the one and frozen by the other.

"There is a vast difference between the *variability* of climate in England and in Italy. In England the changes, (barometrical, thermometrical, and hygrometrical,) are very *frequent*, but they are also very *limited in their range*. In Italy it is just the reverse—the transitions are *not* very frequent; but, when they do occur, the range is often most extensive. Now the *frequency* of alternations in England, and the moderate range of these alternations, are the very circumstances which render them comparatively innocuous. We have cloud and sunshine, heat and cold, winds and calms, drought and rain, twenty times in one day at home; but the British constitution becomes inured to them, and safely so, from the rapidity of their recurrence and the limitation of their range. Nay, this perpetual scene of atmospheric vicissitudes not only steels us against their effects, but proves an unceasing stimulus to activity of body and mind, and, consequently, to vigour of constitution."

Yet this is the country to which so many hundred invalids have been, and are annually sent, far from their homes and their comforts, with the delusive hope of *escaping* the winter. Nothing, indeed, can be more injurious to the valetudinarian, with delicate lungs, or who has a tendency to pulmonary affection, than the excessive and sudden vicissitudes to which southern France and Italy are so signally liable. "The more I see of Italy," observes Mr. MATTHEWS, in his interesting '*Diary of an Invalid,*' who, himself, laboured under a pulmonary affection, "the more I doubt whether it be worth while for an invalid to encounter the fatigues of so long a journey, for the sake of any advantages to be found in it, in respect of climate during the winter. To come to Italy with the hope of *escaping* the winter, is a grievous mistake. This might be done by getting into the southern hemisphere, but in Europe it is impossible; and I believe that Devonshire, after all, may be the best place for an invalid during that season. If the thermometer be not so low here, the temperature is more variable, and the winds are more bitter and cutting. In Devonshire, too, all the comforts of the country are directed against cold;—here, all the precautions are on the other way. The streets are built to exclude, as much as possible, the rays of the sun, and are now, (Rome, December 20th,) as damp and cold as rain or frost can make them. And then, what a difference between the warm carpet, the snug elbowed chair, and the blazing coal fire of an English winter evening; and the stone staircases, marble floors, and starving casements of an Italian house! where every thing is designed to guard against the heat of summer; which occupies as large a portion of the Italian year, as the winter season does of our own. The only advantage of Italy then is, that your pennance is shorter than it would be in England; for I repeat that, during the time it lasts, winter is more severely felt here, than at Sidmouth, *where I would even recommend an Italian invalid* to repair, from November till February; if he could possess himself of FORTUNATUS's cap, to remove the difficulties of the journey. Having provided myself with a warm cloak, which is absolutely necessary, for the temperature varies twenty degrees between one street and another, I have been proceeding leisurely through the wonders of Rome."

In all these situations, too, to which invalids are sent, pulmonary affections, especially inflammation of the chest, are very prevalent, and, in many of them, the deaths from pulmonary consumption are as numerous as in Great Britain, and other countries from which the consumptive are hurried for the purpose of enjoying a more favourable climate. Dr. Clark affirms, that in the whole of Italy, inflammation of the lungs appeared to him more violent and more rapid in its course than in England; and Dr. Kreysig, of Dresden, informed him that he had never witnessed such violent cases of pneumonic inflammation in Germany, as he saw during his stay at Pavia. The testimony, indeed, of every medical traveller is hostile to the expectation of relief in pulmonary disorders, when at all advanced, from a residence under the beautiful skies, but uncertain climate of southern France and Italy.

In our own country, it becomes a matter of momentous inquiry, to select the situations best adapted during the cooler months, for those who have a tendency to, or are labouring under, pulmonary affections. In the summer season, the climate of most parts of the United States is sufficiently mild, with ordinary precautions; but the intense vicissitudes of the autumnal, winter and spring seasons, render it advisable that the invalid at those times should seek a more genial residence.

The following table deduced from the meteorological registers, kept by the Surgeons of the U. S. Army, may aid us somewhat in this investigation.

PLACES.	Mean temperature.	Difference between mean temperature of warmest and coldest month.	Mean temperature from October to March.	Mean monthly variation in the winter months.
	Degrees.	Degrees.	Degrees.	Degrees.
Fort Brady, Michigan	41.37	50.22	24.94	46.50
Fort Sullivan, Maine	42.44	42.61	29.77	39.33
Fort Wolcott, Rhode Island	51.02	39.32	38.57	32.5
Council Bluff, Miss.	50.82	48.73	34.61	61.83
Fort Columbus, New York Harbour	53.78	55.00	38.14	38.00
Fort Mifflin, Philadelphia	53.42	44.28	40.32	39.66
Washington, District of Columbia	56.56	44.47	40.49	36.00
Fort Johnson, Smithville, N. C.	58.88	32.24	56.58	30.16
Fort Moultrie, Charleston	60.18	33.38	56.21	37.50
Cantonment Jessup, 25 miles from Natchetoches			60.47	42.66
Cantonment Clinch, near Pensacola	68.77	29.75	59.36	39.66
St. Augustine, Florida	72.23	27.34	65.55	26.66
Cantonment Brooke, Tampa Bay, Florida	72.37	22.02	66.41	

So far as this table goes, the climates of St. Augustine and of Tampa Bay, Florida, would seem to be best adapted for the consumptive. They are liable, however, to much humidity, and are consequently disagreeable to many valetudinarians. In the interior of the country, such objections probably do not exist: but inland districts are liable to greater vicissitudes, as a general principle, than those near the sea-coast; whilst insular situations are more equable than the latter, owing to the air having to pass over an expanse of water of nearly the same temperature throughout before it reaches them, whatever may be the quarter whence it proceeds. The mean temperature of Funchal, Madeira, is 68°.54; the difference between the mean temperature of the warmest and coldest month is only 11°.52; and the mean temperature of the winter months 63°. The range is twice as great at the Havannah, but the temperature is more elevated. The mean throughout the year is 78°.08. At Vera Cruz the mean is 77°.72; and the difference between the mean temperature of the warmest and coldest month 10°.80; whilst at Cumana the annual mean is 81°.86; and the difference between that of the warmest and coldest months only 5°.22. These last situations are consequently, so far as regards elevation, and equability of temperature, extremely favourable to the consumptive, but they are obnoxious to weighty objections owing to their general insalubrity. The mean temperature of the winter months at Jamaica is 74°.5.

Now, it is well known, that phthisis pulmonalis is not a disease of the torrid regions of the globe, although it is occasionally seen there. A climate, therefore, which approximates that of the torrid zone, will be best adapted for those of weak lungs; yet we occasionally witness phthisical patients even in the confirmed state of the disease, thoughtlessly sent by an inconsiderate physician, in the height of summer from the warm regions on the Atlantic side of the Alleghanies to the comparatively cool and uncertain climate of the Virginia springs; a residence at some of which, especially at the white sulphur, in Green Briar County, is well calculated to develop the affection in such as are by no means strongly predisposed to it, and is consequently with all its discomforts a most insalubrious retreat for the consumptive.

It is now fully admitted, that if they are to derive advantage from a removal to a more genial sky, it must be before the disease becomes confirmed. After this, it is the height of thoughtlessness, if not of cruelty, to send them from their *homes*, devoid of all these comforts which the word comprises, to die far from their friends and connexions. The following observations of Dr. Johnson, on the advantages and evils of an Italian climate are judicious and universally apposite.

"When health is assailed, and life menaced in tender youth, the solicitude of parents is ever ready to make any sacrifice for warding off the danger;—and it is at this critical period, that a remedial or preventive measure, difficult in its execution, hazardous in its result, and too often erroneous in its principle, is put into operation on a slender foundation of hope, and perhaps on a doubtful accuracy of discrimination.

"Fortunately for the sufferings of British invalids, the question respecting a foreign climate in PULMONARY CONSUMPTION has lately been narrowed very much—since it is now universally acknowledged that, when the disease actually exists, viz. where tubercles of the lungs, (constituting the essential cause of the malady,) have softened down, and begun to appear in the form of purulent expectoration, a southern climate is not only useless, but injurious. The advocates of Italy or the South of France, now limit the utility of those climates to a somewhat undefinable state of the human constitution, termed—"disposition towards consumption"—"tubercular cachexy"—in short, to *delicate health*, without any tangible disease. This cachectic habit has been characterized by pallor of the complexion, subject to sudden changes—pearly-whiteness of the eyes—languor of the countenance—dryness of the skin, or alternate dryness and moisture—quickness of the pulse—various derangements of the digestive organs—and a readiness to be put out of breath on taking exercise. In cases like these, I have little doubt that a journey to Italy, or a winter's residence there, would be often beneficial to the general health; but there are very few who would think of going to a foreign climate, solely for the purpose of correcting a delicacy of health corresponding with the foregoing statement.

"But when, to this condition of health, are superadded cough, pain in the chest, shortness of breath in exercise, and feverish symptoms, the important question then comes to be agitated—are there, or are there not TUBERCLES in the lungs? It is often extremely difficult to solve this question, after the most careful examination of the symptoms and the most accurate investigation by the stethoscope—notwithstanding the confidence with which some medical men determine the point.

"Supposing, however, that we have strong reason to calculate on the existence of tubercles, (which, unfortunately, is but too often the case,) how are we to ascertain the *progress* which they have made, between the size of millet-seeds and that of nutmegs—between induration and fluidity? These bodies may be perfectly inert in themselves, though of considerable magnitude and in great numbers, producing little other inconvenience than that of merely diminishing the capacity of the lungs for air by their presence: or they may be softening down, and on the very point of bursting forth into the air-tubes, and thus exhibiting the fearful criterion of confirmed consumption—still without any alarming symptoms. The difficulty, then, of ascertaining the *advance* which these tubercles may have made, and the degree of inertness or activity in which they exist, is extremely great—and yet it is unquestionably upon an accurate discrimination of this point, that the propriety or impropriety of emigrating to a southern climate hinges. Without any other than the symptoms of general delicacy of health, before alluded to, or the superadded ones of a dry cough, &c. the tubercles may be so ripe and so softened down, that before the invalid passes the Alps or the Apennines, they may burst forth, and then the discovery is made, when too late, that the patient is in a worse climate for PULMONARY CONSUMPTION than the one which has been abandoned at so great a sacrifice! This is an every-day occurrence; and the chance of such an event is a fearful drawback on the benefits of a warm climate in affections of the chest.

"But, granting that the pulmonary tubercles are in a quiescent state, (in which state we know they very often remain during a long life, and with little inconvenience,) do we run no risk of their being excited into activity by those excessive atmospheric transitions which occur in Italy? I have endeavoured to show, that the longer the intervals between these vicissitudes, and the greater their range when they take place, the more dangerous they are, and the more likely to kindle up inflammation in the chest, and thus accelerate the march of the tubercular affection. To these drawbacks, we are to add the discomforts and inconveniences of Italian houses, which are all calculated to shade us from heat rather than protect us from cold—the ardent suns of summer being a still greater nuisance than the chilling winds of winter."

And he concludes with the following remarks:—

"The sum total of our knowledge, then, on this important point, appears to stand thus:—I. In DELICATE HEALTH, without any proof of organic changes in the lungs—in what is called a "tendency to pulmonary affection," a journey to Italy, and a winter's residence there, (under strict caution,) offer probabilities of an amelioration of health:—II. In cases where there is a suspicion or certainty of tubercles in the lungs, not softened down or attended with purulent expectoration, an Italian climate, *may* do some good, and *may* do much harm—the chances being pretty nearly balanced:—III. Where tuberculous matter appears in the expectoration, and where the stethoscope indicates that a considerable portion of the lungs is unfitted for respiration, a southern climate is more likely to accelerate than retard the fatal event—and takes away the few chances that remain of final recovery.

"If this be a correct estimate, (it is at least an honest one,) of the influence of an Italian climate on constitutions disposed to, or affected by PULMONARY CONSUMPTION, it shows that medical men incur a fearful responsibility in proposing to the parents and friends of invalids a measure which is fraught with danger, involved in uncertainty, and too often attended by the most destructive sacrifices of the feelings as well as the finances of the parties concerned!

"Those who have not witnessed lingering illness and death-bed scenes in distant climes, can form no just conception of the tide of mournful emotions which daily rushes over the mind of the dying stranger in a foreign land. Death is deprived of more than half his terrors by the sympathy of friends, and the consciousness that our ashes shall be deposited in the land that gave us birth, near those whom, in life, we cherished, loved, or revered! This may be a prejudice—perhaps even a weakness; yet it is NATURAL—it is instinctive—and the instincts of Nature can seldom be entirely repulsed, even by the most philosophic minds.

'Expellas *naturam* furca tamen usque recurrit.'

"But the sigh of sorrow, perhaps of regret, is not always buried in the grave of the sufferer, on these occasions. The COMPANION, who counts the tedious hours of protracted disease, and closes the eyes of the departed friend in a foreign country, undergoes a terrible ordeal, always harassing to the feelings, and not seldom hazardous to life;—while the surviving relatives, at home, are subject to the painful anxiety of suspense—sometimes to the poignant stings of remorse, for having suffered the victim of an irremediable malady to expire on a foreign shore!"

The author properly observes, however, that there is a large class of complaints, which resemble consumption—as chronic inflammation or irritation of the mucous membrane of the lungs, which, under due care, are benefited by passing the winter in the milder localities of Italy. He thinks it probable, too, that in some cases, where there is a very partial or circumscribed tuberculation of the lungs—the rest of the apparatus being unaffected—a winter's residence in Rome, Pisa or Nice might be advantageous. "This is the opinion at least of Dr. Clark; but here the greatest care is to be taken, in examination with the stethoscope, to ascertain that the expectoration comes from a very small excavation, the lungs being elsewhere in a sound state;"—a point, by the way, not always easy of execution. R.

BIBLIOGRAPHICAL NOTICES.

IX. *Traité de la Réunion Immédiate—et de son Influence sur les Progrès Récens de la Chirurgie dans toutes les Opérations, Ouvrage dans lequel on compare les Principes suivis dans les diverses Ecoles, et les Résultats obtenu dans les grandes Hôpitaux de France.* Par M. Serre, Professeur agrégé à la Faculté de Montpellier, ex-Chirurgien Chef interne à l'Hopital Saint-Eloi, de la même ville, ex-Chef de Clinique Chirurgicale, &c. 8vo. Paris, 1830.

Treatise on Union by the First Intention, and its Influence on the recent Progress of Surgery, &c. By M. Serre.

This work was first conceived by M. Serre, in consequence of the supposed injustice shown to French surgeons in general, and to those of Montpellier and the provinces in particular, by Professor Richerand in his recent History of the Progress of Surgery. But as others were speedily found to enter the lists in defence of the national reputation, our author enlarged his plan; and has presented to the world a solid octavo of five hundred and seventy-one pages, in defence of those principles of surgery which are generally considered peculiarly English—showing that there has never been wanting men of great distinction and learning to support those principles in France and other parts of the continent of Europe.

It would be difficult to find another work of a controversial character, and called into existence by the rivalry of contending schools, in which candour and the absence of rancour are more clearly displayed.

The work commences with a chapter upon the history of union by the first intention, more particularly in its application to amputations and other great operations. Of course, this chapter adds but little to the information contained in the writings of Kurt Sprengel, and Samuel Cooper, under the head of amputation, except what relates to the local history and present state of this mode of treatment in France.

Soon after the publication of Alanson's celebrated treatise, Desault in 1783 amputated the thigh of a female, and endeavoured to heal the wound by the first intention. The stump was completely cicatrized on the twenty-second day.

> "From that moment, this method extended itself through France; young surgeons hastened to England and Scotland to witness its effects in practice, and in a short time it was publicly taught by some professors." p. 25.

The revolution put a check to the advance of the doctrine by cutting off the intercourse with foreign countries—but it was not entirely forgotten. After the affair of Newbourgh, Percy performed ninety-two amputations upon the field; but six of his patients died, and in twenty-six days the remaining eighty-six patients were cured, and able to appear in person to receive the reward accorded to them, from the hand of General Dessoles. Many surgeons, captivated by this brilliant success, copied the example of Percy; but among the vast number necessary for the supply of the armies of France, it can hardly be surprising that the youth or inexperience of some unfitted them for that delicate manipulation necessary to the most perfect success of the method, or that they occasionally lacked professional knowledge.

"The voice of the chiefs," says M. Serre, "could not always make itself audible, and the principles of immediate reünion were sometimes misunderstood or forgotten."

The works of John Hunter and the treatise on wounds by John Bell, had scarcely invited renewed attention to this subject, when the author of the well known Clinique Chirurgicale, threatened total destruction to its reputation in France, but the flood of facts constantly accumulated by the army surgeons, among whom the method of immediate union was always more generally popular than with the civil practitioners, proved too strong to be overthrown even by Pelletan. The labours of Professor Dubois also contributed to strengthen the hands of its advocates, and to supply numerous proselytes to the doctrine. In 1812, M. Maunoir, the elder, presented to the National Institute a memoir in which he combated the opinions of Pelletan with high success, and occasioned thereby considerable excitement in the profession.

But it is to the unfortunate Delpech, one of the immediate preceptors of M. Serre, that the latter concedes the credit of carrying the practice of uniting wounds by the first intention, beyond any of his cotemporaries and compatriots, thus changing the entire face of surgery in the school of Montpellier. One of his most brilliant triumphs was the check which he succeeded in opposing to the ravages of an epidemic hospital fever, and gangrene at l'Hopital Saint-Eloi, which carried off nearly all the wounded admitted into that institution from the army of Spain, whose cases required considerable operations. This success was due to the care with which he sought to effect immediate cicatrization, to accomplish which, he cut off the ligatures close to the knot, and finding the adhesive strips insufficient to produce the desired effect, he freely employed the suture in closing the integuments. Treate in this manner the greater part of the patients recovered.

Indeed one of the most remarkable features in the surgery of Montpellier, is the free employment of the suture, and perhaps in this country the prejudice against this mode of treatment may be carried somewhat too far. We have almost never employed them ourselves, even in wounds of the nose, ear, and eyelids, but it must be confessed that in extensive incisions and lacerations much more skill is required to accomplish the accurate coäptation of the edges by means of adhesive strips alone, than by the aid of the suture. The irritation produced by the suture, when properly used, is very slight, the deformity almost imperceptible, and in hospital practice, at times when there exists an epidemic tendency to erysipelatous affections, we have occasionally seen considerable inconvenience resulting from the action of the adhesive plaster on the skin. Fortunately for us the hospital gangrene is a disease scarcely known in America, or this inconvenience might have been much enhanced.

The progress of the practice of union by the first intention seems to have been rather slower in the capital than in the provinces. M. Serre remarks, that while the question was considered nearly settled in the latter in 1814, M. Roux presented a memoir to the Institute, complaining of its unfavourable reception in Paris, and giving twelve cases of its application to the circular amputation of the thigh. The surgeon of La Charité is fearful however of effecting too accurate a coäptation of the edges—he proposes leaving a gap at the inferior angle. In this respect he does not differ materially in principle, from the highest American surgical authority, for Dr. Physick does not advise the healing of the integuments of a stump by the first intention, lest small abscesses should be formed and do injury within.* But what is much more astonishing, Roux does not advocate the immediate union in amputations of the forearm and leg, and Serre himself saw him dress with lint two stumps after amputation of the thigh, so recently as 1829! "which proves that his ideas upon this subject are not yet definitively settled." (p. 34.)

Among the authorities who are considered as wavering on this question, M. Serre enumerates Richerand, acknowledging at the same time that he is one among those who have most strongly insisted upon the utility of this mode of treatment in France, but he is taxed with claiming more credit for originality than is his just desert, and also with some inconsistency in dates, on which we make no further comment than to state that this is the only passage in which M. Serre seems to have indulged in any thing resembling severity: no mean praise in our esteem to the author of a controversial work.

Boyer in the last volume of his Traité des Maladies Chirurgicales, strongly opposes the plan of union by the first intention in amputations, stating that it is seldom successful, and that the stump is sometimes longer in healing under this treatment than when plugged with lint.

We have given this outline of such parts of M. Serre's historical researches as relate to the progress of the doctrine of immediate union in France, in order to show that although there exists some foundation for the charge so often urged in England and reëchoed in this country, that in the treatment of wounds, French surgery is in the rear of the age; yet there have never been wanting able and justly celebrated advocates for the, so styled, English method. The censure is much less generally applicable than is supposed, and we think that M. Serre has successfully vindicated the character of the school of Montpellier, if not that of the nation at large.

The question discussed in the work before us, is so completely settled on this side the Atlantic, that it will hardly be expected of us to draw very largely upon its contents in this notice, but there are occasional remarks which demand a moment's attention.

The second chapter, under the head of Considérations Générales, contains the author's physiological and pathological opinions. Without expressing a positive opinion upon the position of Hunter as to the vitalization of blood, he does not consider the presence of a certain amount of either blood or pus between the divided parts as a material embarrassment in the cure of stumps by the first intention, as both are frequently absorbed—he therefore strongly recommends the accurate coäptation of the integuments by means of suture, although he grants that more or less suppuration takes place in almost every instance, occasionally causing some corrugation of the cicatrix. Although we agree with him as to the propriety of effecting a union of the deeper seated parts, and the integuments also as speedily as possible, we cannot perceive the necessity for the use of the suture in the treatment of amputated limbs, except perhaps during the prevalence of such an epidemic as that which prevailed at Montpellier, to which we have alluded above, and in cases where the integuments display a strong tendency to roll inward, producing a deep groove at the line of junction, as frequently happens in œdematous members.

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* Gibson's Surgery, Vol. II. p. 402.

Union by the first intention is justly considered by M. Serre as a very light labour for the system. He says that the existence of grave constitutional diseases, such as scrofula, herpes, syphilis, &c. do not materially embarrass the process, and he adduces several very strong cases in support of his opinion. That the presence of either of these diseases renders the chance of success in accomplishing immediate union somewhat less considerable we dare not pretend to deny, but it is hardly necessary to contend for the propriety of making the attempt in every case, in an article intended for American readers—although we have recently heard very much to our surprise, that several respectable practitioners in this country advocate an opposite course, upon the same principles which govern some of the distinguished surgeons in France. They hold that the elaboration of pus has a tendency to eliminate the disease! Now even were this idea correct, which it is far from our design to acknowledge, we have at our command, issues and setons, by means of which the same end can be accomplished in a manner infinitely more philosophical and free from all the dangers of exfoliation, gangrene, hæmorrhage, and a vast unmanageable sore.

M. Serre denies the possibility of union by inosculation, believing that a new product is invariably formed between the divided surfaces. The new intermediate structure, in primary union is highly extensible, and this property enables the surgeon to effect the removal of deformities otherwise totally incurable. M. Delpech, for instance, divided the tendo-Achilles in a child who had a congenital contraction of the gastrocnemii, and by careful and continued flexion of the foot, succeeded in enabling the patient to walk. But the suppurating membrane, (membrane pnogenique of Delpech,) first noticed by Bichat, which constitutes the bond of secondary union, is possessed of an indefinite power of contraction, and becomes ultimately fibrous—hence, those deformities which result from secondary union with loss of substance, he holds incurable. The worst cases of this nature are seen in burns; but sufficient benefit has resulted from the excision of the cicatrices formed after such injuries to prove beyond dispute, that they are not entirely without surgical remedy. It should be borne in mind, however, that by the removal of cicatrices we necessarily increase, in some degree, the original loss of substance, and that the disposition to contraction continues in full force after the operation. It is only where we can destroy many firm adhesions with deep-seated parts, and by availing ourselves of the extensibility of the surrounding sound integuments, to cover the site of those adhesions, succeed in substituting the primary for the secondary bond of union, that any benefit will result from our exertions. The degree of relief will be commensurate with the extent to which this substitution is carried, and must depend in great degree upon the laxity of the connexion between the integuments and the parts beneath. The neglect of these considerations has caused the failure of some attempts at the removal of eschars in this country, and has prevented most surgeons from undertaking such operations even under the most favourable circumstances.

In the third chapter, M. Serre considers the conditions necessary to the success of immediate union. He points out certain causes of the want of success which has prejudiced some of his compatriots against the plan. As there is little which would be new to an American reader under this head, we shall merely notice, one or two points upon which we are compelled to differ in opinion from the author. He dwells, we think, too strongly upon the propriety of enucleating tumours in preference to removing them by regular dissection carried through the surrounding parts, when he advises this plan of removal for cancers. The French it is true use the term cancer in a somewhat more extended sense than most of our own surgeons—and it may be that tumours so styled occur, which are sufficiently isolated to admit of this mode of extirpation. But while we remember that we are men and

> " ———— drew milk
> As sweet as charity from human breasts,"

we cannot regard the preservation of the mammary gland as a matter of very serious consequence in a question of life and death.

It would be exceedingly improper to remove the whole mamma in every case of incipient cancer, but those which we have examined, and they are many, have never been sufficiently free from adhesion to the neighbouring parts, to warrant a dependence upon simple enucleation for a radical cure.

Our author dwells with great stress upon the dangers resulting from the enclosure of other parts than the arteries in tying ligatures—an error but too prevalent in this country. He advocates the occasional utility of the method of tortion proposed and practised by Amussat, and since adopted by Velpeau, Roux and others—and he insists very strongly on the advantage of tying the smallest arteries, even those that require a considerable time for their discovery. This direction should be received, we think, with considerable caution. Two distinguished surgeons of this city carry this principle very far, but the majority of operations performed in the Pennsylvania Hospital from 1817 to 1827, were completed with the employment of very few ligatures; and secondary hæmorrhage is of rare occurrence in Philadelphia. Those species of bleeding which result from hæmorrhagic idiosyncrasy, or from the exhaustion of the system by typhoid disease and excessive discharges, take place from vessels altogether too minute to be detected. The only effectual preventive for these accidents is the speedy accomplishment of union. Now the repeated contact of the sponge, and the continued exposure rendered necessary by a protracted search after small vessels, tends to diminish very much the probability of immediate union, and may produce the very evil against which the surgeon is contending. We mean not to argue against a proper degree of caution, but we believe that it is sometimes carried too far. We have seen the forearm successfully amputated, with the employment of but too ligatures, the thigh with three, and in the extirpation of a cancerous disease of the mamma, axilla, and intermediate glands, the tumour of the first mentioned gland dipping beneath the great pectoral muscle and adhering to two of the ribs, after an incision of eleven inches in extent we applied but four ligatures. These are unusual cases it is true, but they have an important bearing on the question.

The rest of this chapter is occupied in discussing the objections raised by Pibrac against the use of sutures, and in determining the relative merits of the adhesive strips, uniting and compressing bandages in effecting the coäptation of divided surfaces; and in the concluding section, the author speaks of the medical treatment of patients after wounds and operations. From this section we learn that Professor Delpech recommends the exhibition of an opiate after every painful operation, upon the same principle with that so frequently advocated in the clinical remarks of Dr. Parrish.

> "In general," says he, "the death of the patient is certain after an operation which exceeds half an hour in duration, unless we relieve the pain immediately upon its completion." (p. 139.)

The fourth and fifth chapters are devoted to a fair and candid statement of the principal objections urged by various authorities against the plan of immediate union, with suitable replies, and to a comparison of the success of this and the opposite mode of treatment; from which we rise with the conviction that the author has most ably defended his cause, and aided materially in elevating the just reputation of the school of Montpellier. His references to the plans of treatment pursued at the different hospitals of Paris, and their comparative success, are highly interesting. We quote but one fact because it has some relation to a question that does not seem to be absolutely settled even in this country. It appears that at the Hôtel-Dieu, and l'Hopital Saint-Louis, more importance is attached to the union by the first intention than at the other hospitals; and it is at these institutions that there occur the smallest number of deaths after the excision of the mamma. M. Serre witnessed a greater amount of mortality from this operation at La Charité in one year, than had taken place in ten years at l'Hôtel-Dieu de Montpellier! Lest it should be supposed that this circumstance resulted from the greater number of patients admitted at La Charité, he adds "if it were necessary to establish here a rule of proportion, the difference would be still more striking." (p. 173.)

The remainder of the work consists of applications of the general principles laid down in the preceding chapters to the whole range of surgical operations. It is replete with interesting cases and explanatory remarks; commentaries on the peculiar modes of different surgeons, and the practice of the various hospitals of Paris. It is evidently intended more particularly for the profession in France, and cannot fail to produce considerable effect in the sphere for which it is designed. It is written in a spirit of perfect fairness, and whether the peculiar views of the author bring him into collision with the professors of a rival school, or as sometimes happens with his own favourite preceptor, the love of truth evidently rises superior to personal considerations.

The American reader will find little to object against, except perhaps the constant employment of sutures and some peculiar ideas on the subject of cancer. While the multitude of important facts and cases which the work contains, will amply repay the labour of perusing nearly six hundred pages written in defence of opinions which he feels no disposition to oppose. R. C.

X. *On the Law of the Diffusion of Gases.* By Thomas Graham, Esq. M. A., F. R. S. Ed. &c. [Trans. Royal Soc. Edin. Vol. XII. Part I. 1832.]

One of the most interesting subjects which has occupied the attention of philosophers within the last few years, has been the development of the laws which regulate the diffusion of gases through each other. The bearing of the subject upon general science and upon physiology, has led to the study of it under two different aspects; it is considered in the former point of view by Mr. Graham, in the memoir of which the title is prefixed to this notice. We propose to notice this memoir somewhat in detail, not with the intention of giving a historical view of the entire subject, or of any part of it, but to compare it directly with a memoir "on the penetrativeness of fluids," which appeared two years since in this Journal, by J. K. Mitchell, M. D. Lecturer on Chemistry in the Philadelphia Medical Institute. The paper of Dr. Mitchell was published in November, 1830, and his experiments were made in July, August, and September of the same year; the memoir of Mr. Graham was read before the Royal Society of Edinburgh on the 19th of December, 1831, or one year subsequent to the publication, in this Journal, of the experiments of Dr. Mitchell.

Not only this; the entire memoir of Dr. Mitchell was copied into the Journal of the Royal Institution of London, part of it having appeared in the number published in July, 1831, and part in that of November of the same year. The paper of Mr. Graham was, therefore, read more than four months after the publication, in England, of the first part of the memoir of Dr. Mitchell. Others less charitable might charge at once a similarity of experimental results, occurring under such circumstances, to more than mere accident; but we are not disposed to deal thus, being rather contented to show where the similarity exists, and to claim for our countryman his due meed of praise for successful experiment. In such an award Mr. Graham should be the first to join us, and we are satisfied that he will do so, and thus our charity will be proved not misplaced.

The memoir of Mr. Graham begins by stating the law of diffusion in the following terms:—

"The diffusion, or spontaneous intermixture of two gases in contact, is effected by an interchange in position of indefinitely minute volumes of the gases, which volumes are not necessarily of equal magnitude, being, in the case of each gas, inversely proportional to the square root of the density of the gas."

This leads us to remark upon the entirely different objects to which Dr. Mitchell and Mr. Graham directed their attention, a difference which renders the analogy of their experiments the more striking. The former experimented upon the *power* with which the diffusion was accomplished, and the *rate* for different gases; the latter upon a *total effect*, namely, the amount of one gas exchanged for another when the whole diffusion was terminated. If Mr. Graham shall be thought to have fully established the law which he lays down, he is solely, as far as we know, entitled to the merit of it; we consider it a great merit, and if we require further evidence to prove satisfactorily so important a proposition, it results in part from the want of success of his methods when applied to gases varying most in their physical characters from those, upon the results obtained with which the law may be deemed to rest. A further reason will be stated in the course of our comments. We proceed to the task of comparison, in this case not an ungrateful one, since, we repeat it, our object is not to disparage Mr. Graham, but to claim for our countryman the priority in an ingenious series of observations. After stating his law, and the definition of his terms, Mr. Graham proceeds—

> "If the two gases are separated at the outset by a screen having apertures of insensible magnitude, the interchange of 'equivalent volumes of diffusion' takes place through these apertures, being effected by a force of the highest intensity; and if the gases are of unequal density, there is a consequent accumulation on the side of the heavy gas, and a loss on the side of the light gas. In the case of air, for instance, on the one side of the screen, and hydrogen gas on the other, a process of exchanging one measure of air for 3.7947 measures of hydrogen through the apertures is commenced, and continues till the gases on both sides of the screen are in a state of uniform mixture. Experiments on this principle can be made with ease and precision, as will appear in the sequel, and afford an elegant demonstration of the law." pp. 222, 223.

Dr. Mitchell says—

> "I confined it," (the gas,) "in a wide-mouthed bottle, over the aperture of which I tied very firmly a thin sheet of the elastic membrane," (prepared gum elastic.) "In a few hours the descent of the cover into the cavity of the bottle gave evidence of a diminution of the contained gas, and finally the cover was burst inwards by the pressure of the atmosphere, so great had been the rarefaction of that which remained in the bottle." "The minuteness of the atom of hydrogen might readily enough account for the greater facility with which it penetrated the membrane, but could not be considered a good reason for the *energy* with which the penetration was accomplished." "The *power* was ascertained by comparison with common air, and the *rate of action* both in that mode and by comparison with each other."

The instrument used by Mr. Graham in his experiments, and which he called a diffusion tube, is thus described:—

> "A simple instrument, which I shall call a diffusion tube, was constructed as follows:—A glass tube open at both ends was selected, half an inch in diameter, and from six to fourteen inches in length. A cylinder of wood, somewhat less in diameter, was introduced into the tube, so as to occupy the whole of it, with the exception of about one-fifth of an inch at one extremity, which space was filled with a paste of Paris plaster of the usual consistence for casts. In the course of a few minutes the plaster set, and withdrawing the wooden cylinder, the tube formed a receiver closed with an immoveable plug of stucco." p. 226.
>
> "I shall treat in succession of the escape of the different gases from a diffusion instrument into air. As the contained gas bears no proportion in quantity to the external air, the gas escapes entirely, and is wholly replaced by air. It is of the utmost importance to determine the proportion between the volumes of gas diffused, and the replacing volume of air eventually found in the instrument. We thus obtained the *equivalent diffusion* volume of the gas, which it will be convenient to state in numbers with reference to the replacing volume of air as unity." pp. 228, 229.

The instrument employed by Dr. Mitchell is thus described:—

> "Having constructed a siphon of glass with one limb three inches long, and the other ten or twelve inches, the open end of the short leg was enlarged and

formed into the shape of a funnel, over which, finally, was firmly tied a piece of thin gum elastic. By inverting this siphon, and pouring into its longer limb some clean mercury, a portion of air was shut up in the short leg, and was in communication with the membrane. Over this end, in the mercurial trough, was placed the vessel containing the gas to be tried, and its velocity of penetration measured by the time occupied in elevating to a given degree the mercurial column in the other limb."

By the use of plaster, various difficulties were encountered by Mr. Graham, owing to the absorption and retention of the gases by the plaster, &c. which were avoided by the simple covering used in the diffusion tube of Dr. Mitchell. Both the experimenters assume that the phenomena of diffusion or penetrativeness are the same with and without the interposition of a membrane, or other capillary mass. Upon this point we are by no means certain, and it seems to constitute an objection to the conclusiveness of the law investigated by Mr. Graham, as being that of the *diffusion of gases.* That the total diffusion in different gases does not follow the order of their absorption and retention by charcoal and other porous bodies, &c. is no refutation of our objection. On this subject Dr. Mitchell remarks—

"If the recipient beyond the membrane be as active as the membrane, or more so, all that the membrane brings to its surface will be transmitted as fast as it arrives; but if that recipient be of inferior penetrability, less will pass on than the membrane could carry through, and in that case the rate of penetrativeness of the substance is inappreciable. Any gas penetrates another gas better than it does any solid, hence we obtain for *them* the true rate," &c.

It is possible that the modifying effect of the membrane, or of the stucco, may disappear in the case of gases, but we cannot understand that it should necessarily do so, and in establishing an important law, no point should be left uninvestigated, which may influence the general result.

The necessity of examining the effect of mechanical pressure seems to have occurred to both experimenters. Mr. Graham says—

"I was led to investigate the rate at which air, hydrogen, and the other gases flow through the stucco plug into a vacuum under the influence of mechanical pressure.

"A small bell jar, with an opening at top, was used, which opening was closed with a plug of Paris plaster of half an inch in thickness, over which a brass cap and stop-cock were fitted and cemented. This receiver was placed on the plate of an air-pump, in perfect order, and exhausted. When the stop-cock of the receiver was closed, nothing entered the exhausted receiver; but on opening it, either air entered, forcing its way through the pores of the stucco, or any gas which might be conducted to it by means of a flexible tube from a proper magazine." p. 237.

Dr. Mitchell remarks—

"The circumstances essential to the transmission of gases through the membrane, formed an interesting subject of inquiry.

"My first attempt was to produce a vacuum; by placing the gas in a bottle, and exhausting by means of an air-pump the bell glass which covered it. The gases effected their escape from the bottles thus treated, with a velocity proportional to the rate of permeation already ascertained; sulphuretted hydrogen passed out more rapidly than carbonic acid, and that than hydrogen. Still as *some* air is always found in an exhausted receiver on the finest air-pump, I passed a tube containing carbonic acid into a Torricellian vacuum, where it very speedily escaped, and caused the descent of the mercury, &c."

Again, Mr. Graham observes, on the effect of *increased* pressure—

"The greater the pressure, the more rapidly are gases forced through the pores of the plug; but the quantity of gas which penetrates in any given time is not exactly proportional to the pressure, at least in the case of air and hydrogen. By doubling the pressure, we do not quite so much as double the quantity of gas forced through." p. 238.

"The ratio of the times in hydrogen and air is not greatly different at different pressures." p. 239.

The different materials through which the diffusion was effected, are next to be noticed. Mr. Graham states—

"Dried bladder answers for showing the diffusion of hydrogen when stretched over the open end of a tube receiver. The diffusion, however, through a single thickness of bladder, is effected at least twenty times more slowly than through a thickness of one inch of stucco. While, on the other hand, either air or hydrogen, under mechanical pressure, passes more readily through bladder than a great thickness of stucco. Gold-beater's skin is even more permeable by gases under a slight pressure than bladder, and less suitable for diffusion." p. 240.

On the subject of the *same* materials, we find from Dr. Mitchell—

"Accordingly, each gas was subjected to the action of animal membranes, which replaced the gum elastic at the mouth of the shut limb of an inverted siphon. Dried bladder, and gold-beater's skin, moistened to cause an approach to a normal state, and sections of various recent tissues, were successively tried, and found to act on the gases in the manner and order in which they were affected by gum elastic. The more *recent* the membrane, the more rapid and extensive the effect produced; and in living animals the transmission was very rapid."

Besides these substances, Mr. Graham experimented upon stucco, cork, certain minerals, charcoal, and wood. Dr. Mitchell upon caoutchouc, various animal membranes, &c.

We should here remark, that the observation of the inflation of a bladder, partly filled with coal gas and plunged in a receiver of carbonic acid, made by Mr. Graham, and published in the Journal of the Royal Institution, 1829, is noticed in extenso by Dr. Mitchell, while the same experiment, though bearing so immediately upon the subject, is not even alluded to in Mr. Graham's own paper.

Both the experimenters criticise the theory of Dalton of the diffusion of gases. Mr. Graham remarks—

"It might occur, in explanation of our experiments with the diffusion instrument, to take Mr. Dalton's hypothesis; and suppose, in the case of hydrogen, the external air to be a vacuum to the hydrogen, and the hydrogen to be a vacuum to the air, and that the *inequality* of the diffusion depends upon the hydrogen *being least resisted in passing through the plug*. The experiments on the permeability of the stucco by gases under pressure, above detailed, were projected with a view to settle this point among others; and they are evidently incompatible with such an application of the theory, for hydrogen passes 2.4 times more swiftly, and not 3.8 as in the diffusion experiments, &c."

Dr. Mitchell—

"The power of the penetrativeness is very considerable, being *certainly* superior to that of two, and *possibly* equal to more than that of forty atmospheres."

"We are struck with an unexpected result, the *great* POWER of gases to infiltrate *each other.* It has been long known, that aëriform substances confined in the same apartment, finally mingle uniformly, and that, even if the lighter one be placed above the other. To account for this, and some other facts of the same class, Mr. Dalton supposed that each gas, in reference to the vertical relation of its particles, stood in an attitude of independence of any other gas present, as much as if no such gas were confined along with it, no particle of one gas being supposed to rest on any particle of the other, the interstitial cavities of one gas being in fact a *vacuum* for the reception of the molecules of the other, each for each.

"The *power,* however, of this infiltration being known, we are entitled to conclude, that the interspaces of gases are reciprocally occupied with a force similar, and probably equal to that which causes the imbibition of liquids by solids, and produces solutions of substances, even of the highest cohesive attraction."

We conclude by a recapitulation of the points proved by Dr. Mitchell, and to which he has a just title of priority over any claims which Mr. Graham's experiments would give.

"1st. Substances, formed of organic matter, are generally penetrable by gases of all kinds, and by several, if not by all liquids.

"2d. Each animal or vegetable tissue is differently penetrable as to time by different fluids.

"3d. But all fluids penetrate any particular substance at rates susceptible of being ascertained. The gases retain the relation observed by reference to one substance in all other cases. Whatever may be the greater or less penetrability of any given tissue, the gases penetrate it, relatively to each other, according to the ratio observed in experiments on other tissues.

"4th. The *ratio* is not so uniform in the substance of denser fluids. Liquids, though rateable with regard to permeation of any given substances, do not act similarly on different organic substances. Thus water penetrates most, if not all animal tissues, better than any other liquid whatever, and consequently passes through them to accumulate in *any of its own solutions,* and in alcohol or ether; while these two latter substances penetrate gum elastic with more facility than either water or its solutions. Therefore with regard to gases, the *ratio* of penetration depends on them alone, while in the case of liquids, it depends on the joint agency of both liquids and tissues.

"5th. When the quantity of the fluids is limited, there is a gradually diminished rate of progression as the infiltration proceeds. It is proportional to the state of dilution, and ceases when the substances have become on both sides of the membrane, of uniform condition, unless some extrinsic power is then operative.

"6th. The power of the penetrativeness is very considerable, being certainly superior to that of two, and *possibly* equal to more than that of forty atmospheres.

"7th. Penetrativeness acts not only on organic tissues, but also on gases and liquids, and with apparently equal power on all. For after permeating a membrane, the gas or liquid goes on into the molecular tissue of the gas or liquid beyond, and no pressure which the membrane can bear, acts as a restraint on the progression.

"8th. Although of such high mechanical power, the penetration can be to a certain degree, affected by extrinsic agency. Thus pressure or attraction will cause permeation, where it would not otherwise take place, as when a single gas or liquid travels not only through, but beyond a membrane, where there exists nothing to imbibe it, which it would not do, unless subjected to propulsion. Electricity, possessed of hydrogogue powers, acts on water in a similar manner, causing it to collect on either side of an animal membrane, at pleasure, although no other liquid is there to receive it.

"9th. The penetrativeness of gases for each other seems to vary in velocity, but not in force.

"10th. Reference to the above-mentioned law and modifying agencies enables us to explain many phenomena hitherto imperfectly understood. We, by means of them, comprehend the uniform constitution of mixed gases in any vessel, or in the atmosphere, notwithstanding the greatest difference in specific gravity. It explains the diffusion of odours, the nature and progression of caloric under slow conduction. It affords us new views of the theory of respiration, and accounts, in that process for some well ascertained facts, for which there previously existed no adequate explanation.

"It shows us how emphysema and tympanitis may happen without secretion of gases, or lesion of tissue, and how a spontaneous cure may be produced. It leads to the probability of the existence of gaseous matter of very various kinds, in almost every part of the animal frame, resident there molecularly, and not *en masse*, but susceptible of being collected into mass in the great cavities or the cells of the tissue, or blood-vessels by mechanical or electrical influence, or the attractive interstitial agency of other masses of air.

"It teaches the important truth, that water is the great general infiltrator and diluent, a knowledge of whose habitudes will be thus rendered more clear and more useful." B.

XI. *Caspar Hauser. An account of an Individual kept in a Dungeon, separated from all Communication with the World from early Childhood to about the Age of Seventeen* Drawn up from Legal Documents. By Anselm von Feuerbach, President of one of the Bavarian Courts of Appeal. Translated from the German. Boston. Allen & Ticknor. 1832, pp. 178. 12mo.

Many of our readers doubtless recollect to have seen, in the papers of the day, an account of an individual who it was represented, had been found in Nuremberg in a condition which left his previous life enveloped in the greatest mystery. This individual is the subject of the present short, but extraordinary narrative, which may be truly termed a romance of real life. To the physiologist and metaphysician it is a most invaluable record, as shedding a new and most unforeseen light on some of the most intricate questions connected with the development of the human mind.

We shall not attempt to follow the history of this unfortunate being, except as connected with circumstances which fairly come within the design of a medical work. All that may be necessary to state at present is, that when Hauser was found, he appeared to be about sixteen or seventeen years of age, had never learned to speak, and that in all probability he had been shut out during his whole life from all communication with the world, in a narrow, dark dungeon, in which he was always obliged to remain in a sitting posture, that his food had invariably been bread and water; in fact, that he had enjoyed a mere animal existence.

"Light had never shown upon this being, either on his eye or on his soul; and when he emerged from his lonesome darkness, he was like a new-born child in respect to all which must be acquired by experience, whilst the instruments for acquiring that experience, the natural faculties, of course differed from those of a child so far as they were affected by the mere age or growth of the individual."

His physical appearance when he appeared at Nuremberg is thus detailed. He was four feet nine inches in height, and about sixteen to seventeen years old. His chin and lips were very thinly covered with down; the dentes sapientiæ were wanting. His skin was fine and very fair; his limbs were delicate, and his feet showed no marks of having ever been confined by a shoe. His face was almost without expression, except that of a brutish obtuseness. He scarcely knew how to use his hands or fingers. His gait was like the first attempts of an infant to walk.

A medical examination was ordered to be made, the results of which, as stated by Dr. Osterhausen in his report, present some curious anatomical details. The patella, instead of forming a prominence, lay in a hollow. The tendons of the two vasti muscles were separately inserted into the tibia. From this peculiar formation, when Hauser sat down, with his leg and thigh extended horizontally on the floor, his body formed a right angle with the thigh, and the knee-joint was applied so closely to the floor as to prevent the passage of even a card beneath it.

He constantly evinced the strongest aversion to all kinds of meat and drink, and would only partake of bread and water. Even the smell of other food affected him disagreeably. The ingestion of the smallest quantity of wine, or coffee, occasioned him cold sweats and vomiting; even milk disordered his stomach. He was in possession of but two words, which he used to designate living beings; whatever appeared in the human form he called "bua," and to every animal he gave the name of "ross," (horse.) When first found, not only his mind, but most of his senses were in a state of torpor, but his nervous excitability was soon developed in an extraordinary degree; thus, the beating of a double drum near him threw him into convulsions. Not a spark of any religious belief was to be discerned in him.

The account which he gave of himself was as follows:—

> "He neither knows who he is nor where his home is. It was at Nuremberg that he first learnt that besides himself and 'the man with whom he had always been,' there existed other men and creatures. As long as he can recollect, he had always lived in a hole, (a small, low apartment, which he sometimes called a cage,) where he had always sat on the ground with bare feet, and clothed only with a shirt and pair of breeches. In his apartment he never heard a sound, whether produced by man, by an animal, or by any thing else. He never saw the heavens, nor did there ever appear a brightening (daylight) as at Nuremberg. Whenever he awoke from sleep he found a loaf of bread and a pitcher of water by him. Sometimes this water had a bad taste; whenever this was the case he could no longer keep his eyes open, but was compelled to fall asleep; and when afterwards he awoke, he found he had a clean shirt on, and that his nails had been cut. He never saw the face of the man who brought him his meat and drink. How long he continued to live in this situation he knew not."

It appears from his imperfect narrative, that his keeper once came behind him, so as not to be seen, and guided his hand so as to make it write something, and soon afterwards placed him on his feet, and attempted to teach him to walk, and finally, that the man carried him out from his prison on his back; of his journey Hauser knew but little, except that he fainted several times during it.

The state of his mind during his confinement, as far as could be ascertained, must have "been that of a human being immersed in his infancy in a profound sleep, in which he was not conscious even of a dream." In this condition he remained till he suddenly awoke, as it were, by the forcible impressions of external objects on his senses. He has no recollection of having ridden on his journey, though, from the deep sleep which riding always produces on him, this may have taken place. When he is asleep, noises appear to have no influence on him, and even rough treatment does not awaken him.

When first found, his saliva was as viscous as glue, but this afterwards became natural, on a change of food. He betrayed a great aversion to any glare of light, and his eyes were much inflamed. He was subject to spasmodic contractions on the left side of his body, especially when excited by any new object, or when his mind was deeply engaged, these spasms were succeeded by a state of nervous rigidity. With regard to colours, Hauser always preferred the most glaring. At first he had no idea of size or distance; thus when directed to look out of a window, he instantly drew back with repugnance, this he afterwards explained, by saying that it appeared as if the objects were close to his eyes. Drawings or paintings appeared to him as much relieved as if carved in wood.

It appears from a subsequent report of his medical attendant, that the multifarious impressions made upon his mind were too powerful, and produced a high state of nervous excitability.

> "The muscles of his face were affected with frequent spasms. His hands trembled so much, that he was scarcely able to hold any thing. His eyes were inflamed, they could not bear the light. His hearing was so very sensible, that all loud speaking caused him violent pain."

He lost his appetite, and his gastric functions became disordered.

He was then removed to a quiet house, and no one permitted to see him. Here he, for the first time, slept in a bed, and began to dream. One of the most difficult undertakings was to accustom him to the use of ordinary food; this was a work of months, and it is a curious fact, that before he became accustomed to warm food, he was tormented with a constant thirst, drinking daily from ten to twelve quarts of water. After he became habituated to meat, his mental activity was diminished, his eyes lost their brilliancy and expression, and in short, his state of morbid excitement gradually disappeared. This change of diet had also a remarkable effect on the development of his body, as he gained two inches in height in a very few weeks.

It would be impossible for us to detail the various mental phenomena that the gradual development of his faculties occasioned; we may, however, mention a few of the most striking, as exemplifying how slowly the mind acquires habits of just comparison. Thus, it was a long time before he could comprehend the difference between animate and inanimate objects, and he conceived that every motion which took place in any object was spontaneous; thus, if a sheet was blown down by the wind, he thought that it had run away. He supposed that a tree manifested its life by moving its branches and leaves, and that the rustling of the latter, when agitated by the wind, was the voice of the vegetable. To animals, he for a long time ascribed the same as to men, and appeared to distinguish the one from the other only by the difference of their external form.

As to his sight, it was very peculiar, as he could see in the dark as perfectly as in the light; this was proved by numerous experiments; thus, in a perfectly dark night, he could distinguish blue from green, &c. His sight was also extremely acute, both as to distance and nicety. His hearing was as remarkable; but of all his senses, that which was the most troublesome to him, and which rendered his life miserable, was that of smell. What to all other persons was entirely senseless, was not so to him. The odour of a rose overcame him; in fact, every smell except those of bread, fennel, anise and caraway, were more or less disagreeable to him. He could distinguish fruit trees from each other at a considerable distance by the smell of their leaves. The odour of old cheese made him feel unwell, and caused vomiting. What are considered by most persons as unpleasant smells, were much less offensive to him than what we consider as agreeable perfumes.

There is a fact connected with this acuteness of smell, which settles the question of the emanations from burying grounds; when he walked near a church yard, the smell from it which was not perceptible to any one else, occasioned him a complete paroxysm of fever.

One of the most extraordinary peculiarities of Hauser's temperament was his susceptibility to magnetic and metallic excitements. A toy was given him furnished with a magnet, this he would not use, as he complained it occasioned him unpleasant sensations. On learning this fact Professor Daumer made some experiments on him with a magnet. When the north pole was presented to him, he complained of pain in his stomach, and that a current of air appeared to flow from him towards the magnet; the south pole had less effect on him. These experiments were varied as much as possible, but he was never deceived. In respect to his sensibility of the presence of metals, and his ability to distinguish them by his feelings, many instances are adduced. He described his sensations of the contact of metals, as a feeling of drawing or attraction, which passed over him, accompanied at the same time with a chill, which ascended according as the objects were different, more or less up the arm. This sensibility he gradually lost. When he caught a cat by the tail, he was seized with a strong fit of shivering, and felt as if he had received a blow upon the hand.

His present state is thus described.

> "His mode of life is that which is common to most men. With the exception of pork, he eats all kinds of meat, if not seasoned with hot spices. His favourite condiments still are caraway, fennel and coriander. His drink continues to be water, and only in the morning he takes a cup of unspiced chocolate instead of it. All fermented liquors, beer and wine, as also tea and coffee, are still an abomination to him; and, if a few drops of them were forced upon him, they would infalliably make him sick.
>
> "The extraordinary, almost preternatural elevation of his senses, has also been diminished, and has almost sunk to the common level. He is indeed still able to see in the dark; so that, in respect to him, there exists no real night, but only twilight; but he is no longer able to read in the dark nor to recognise the most minute objects in the dark at a great distance; whereas he was formerly able to see much better and more distinctly in a dark night than by daylight, the contrary is now the case. Like other men, he is now able to bear, and he loves the light of the sun, which no longer distresses his eyes. Of the gigantic powers of his memory and other astonishing qualities not a trace remains. He no longer retains any thing that is extraordinary, except his wonderful fate, and the gentleness of his disposition."

In the above abstract we feel that we have not given as connected a view of the operations of Hauser's feelings and mental faculties as they were gradually acted on, and developed by the action of external objects, as could have been wished, this however our limits prevented, and we must therefore refer such of our readers as wish for more information, to the work itself, which will amply repay an attentive perusal. R. E. G.

XII. *An Essay on the Structure and Functions of the Skin; with Observations on the Agency of Atmospheric Vicissitudes, through the Medium of the Skin, in the production of Affections of the Lungs, Liver, Stomach, Bowels, &c.* By William Wood, M. D. Member of the Royal College of Surgeons of London, and Physician to the Newport Dispensary. Edinburgh, 1832. Octavo. pp. 172.

The agencies exerted by and through the skin, considered in reference to the healthy and morbid conditions of the animal economy, are so important as to give to the study of the structure and functions of the external covering a strong claim to our attention. The cutaneous texture is, in fact, the link which connects our system with the external world, and through which we make the acquaintance of all physical matter. Besides its nervous relations, it exercises the important functions of perspiration and absorption, with the actions of cicatrization and the formation of inorganic coverings.

The author's inquiries relative to the extent to which the two functions of absorption and transpiration are carried on, are among the most interesting presented to us. With regard to the latter function, he details the most important experiments heretofore tried: those for example of Lavoisier and Seguin, which brought those able chemists to the conclusion, that the whole loss by the skin and lungs in the latitude of Paris, at its minimum, is nearly 9 grains, troy, per minute, and at its maximum nearly 26 grains, troy. Taking the mean of the two sums mentioned for the average quantity, we find this for the twenty-four hours to be about 54 ounces. Of the entire loss, the proportion from the pulmonary surface is estimated at one-third, whilst two-thirds pass off by the skin; that is to say, 18 ounces, troy, pass off daily by the lung, and 36 ounces by the skin.

In these experiments the naked body was introduced into an air-tight bag, made of silk varnished with elastic gum; whilst breathing was maintained through a tube, the funnel end of which was glued around his lips, the other extremity passing out of the bag, so as to prevent all communication between its interior and the mouth. The difference between the weight of the body, before it was enclosed in this apparatus, and its weight after being divested of it, showed the whole loss, in a given time, both by the skin and lungs. The difference between the weight of the body immediately after it was enveloped in the bag, and just before it was divested of it, exhibited the loss by respiration, which quantity substracted from the amount of the whole loss showed the proportion by the skin alone.

The objection made by our author to this experiment, is one in which we fully agree with him, namely, that notwithstanding its ingenuity and apparent accuracy, it is questionable whether the state of the body whilst enclosed in an air-tight bag, is sufficiently near to the ordinary circumstances of existence, to induce us to adopt the conclusion without some modification or allowance.

No experiments, he thinks, are to be relied on, as exhibiting the true extent of the secretion by the skin, unless the absorbing power of the atmosphere is allowed to exert its full effect, as in the natural circumstances of the body.

Our author prefers the method pursued by Cruikshank and Abernethy, from its leaving the body more under the ordinary circumstances. Their plan consisted in confining the hand for an hour in an air-tight glass jar, and collecting the transpired moisture. Mr. Abernethy having weighed the fluid collected in the glass, multiplied its quantity by 38½, the number of times he supposed the surface of the hand and wrist to be contained in the whole surface; and obtained as the result 2½ lbs. in the twenty-four hours. This is upon the supposition that the whole body perspires at an equal degree.

Conceiving that greater accuracy might be given to this method, our author set about making experiments with some modifications of the plan. He pasted around the mouth of the jar one extremity of the bladder, both ends of which were cut away, and the hand being passed through the bladder into the jar, the other extremity was bound to the wrist with a ligature, not so tight however as to interfere, in any degree, with the circulation. The exact weight of the jar and bladder was before ascertained, and during the experiment cold water was applied to the outer surface of the jar, to cause the deposition of the fluid accumulated within. This last measure was, we think, of exceeding importance, since it kept down the atmosphere of vapour which would otherwise have formed, and obviated any influence this might have upon the process by interfering with evaporation.

The following exhibits a condensed view of his experiments.

Time of day.	Temperature of Apartment.	Rapidity of pulse per minute.	Fluid collected in an hour.
1st, noon	66°	84	32 grains.
2d, same	66	78	32
3d, same	66	78	26
4th,	61	84	32
5th, 9 o'clock, P. M.	62	80	26
6th, same	62	75	23
Means	63.8	79.8	28.5

These results obtained, a great difficulty next arises in estimating the proportion which the surface of the hand and wrist bears to the whole surface of the body. Abernethy reckoned it at 1 to 38½; whilst Cruikshank computed it at 1 to 60. Our author considers the last estimate as unquestionably erroneous, and that of Abernethy as not altogether just. The surface of the hand and wrist, according to Abernethy, is equal to 70 square inches, which our author thinks is near the truth, having found it to correspond both with his own measurements, and with the reports of the glove-makers. But the estimate of the superficial area of the whole body, which Mr. Abernethy makes 2700 square inches, or above 18 square feet, is considered too high, and differs from that of the best authorities, who do not make it exceed 2304 square inches, or 16 square feet. Our author is therefore disposed to think that the proportion of the hand and fingers, taken to the extremities of the bones of the arm, does not fall short of 1 to 32, which, if the above proportion of the quantity transpired per hour be adopted, gives for the whole body about 45 ounces, or nearly 4 pounds troy in the twenty-four hours.

> "The quantity here stated," says our author, "is considerably above that brought out by the experiments either of Seguin or Abernethy; but as, on reviewing the experiments and calculations, I find no error, I am disposed to think it cannot be far from the truth. It is true the temperature, during these experiments, was somewhat above the mean temperature of this climate; but it cannot much exceed the medium artificial warmth to which our bodies are exposed within doors. If such then is the quantity of this secretion at this moderate temperature, and when a person is at rest, at a higher temperature, and under severe exertion, it must be very much increased, to what extent, however, it must be very difficult, if not impossible, to determine. It appears that the discharge goes on as freely in the open air, at a lower temperature, as at a higher within doors. Every one must have remarked, that a person may walk at a brisk pace, even for a considerable distance, on a warm day, without any perceptible sweating, till he enters a house and sits down. In walking along, the air in contact with the clothes being constantly changed, absorbs rapidly, compared with equally dry air changed but slowly, when in contact with a person at rest; and besides, the air within doors is usually less dry than the free air without, and more particularly than that of the open country."

That cutaneous exhalation does not proceed in an exact ratio with the temperature of the atmosphere has been demonstrated by the experiments of Edwards, who found that at 68° it was twice as great as at 32°; at 104° it was seven times greater than at 32°; and that in the extremes of moist and dry air, it proceeds respectively in the ratio of 1 to 10.

The remark of Edwards, that the cutaneous exhalation becomes less in the latter part of the day, agrees with the results of our author's experiments. Both Seguin and Edwards agree that it is increased towards the end of the process of digestion, and our author thinks there is good reason to believe that it is augmented during sleep. Indeed, Sanctorious, the father of the inquiries into cutaneous transpiration, found that the body loses weight more sensibly during night than in an equal number of hours in the day.

With regard to the quantity of moisture thrown off by the lung, our author has made some experiments of his own, previously to noticing which we will observe that Sanctorious made it amount to half a pound daily; Hales to twenty ounces; Abernethy, nine ounces; Menzies, six ounces; and Thompson as high as nineteen ounces, in the twenty-four hours. The author's detail of his experiments is as follows:—

> "Having fitted a large cork into the mouth of a glass jar capable of containing about three pints, I passed two glass tubes through the cork so that I might breathe into the jar through one, while the air afterwards escaped by the other. The jar was placed in a vessel of cold water, that the expired air, being cooled, might deposit its moisture; then endeavouring to imitate natural respiration as exactly as possible, I continued, for an hour, to direct the air of each expiration into the jar. Having repeated this experiment several times, about midday, I found the averaged quantity, determined by weighing the jar, to be 117 grains. When the same experiment was repeatedly made in the evening, between 8 o'clock and midnight, the average amounted to 129 grains. If the mean of these two numbers be taken, we obtain for the twenty-four hours very nearly six ounces; which agrees with the earliest statement by Sanctorious, and with that subsequently made by Menzies. It differs also but little from the quantity of watery exhalation deducible from the experiments of Lavoisier and Seguin. For if the entire loss by the lung, in twenty-four hours, is 18 ounces, and if, according to the testimony of Allen and Pepys, 11 ounces of solid carbon are thrown off in that time, there will remain just 7 ounces, for the amount of the watery exhalation. It is worthy of remark, that this watery exhalation of the

lung is at its maximum in the evening, or just at the time when the cutaneous exhalation is at its minimum. This balance between the exhalation of the skin, and that of the lung, points out the importance of the function of the skin, both as a source of disease in the lung, and as a channel of relief when it becomes actually affected."

In the much agitated question relative to the quality of the aërial portion of the cutaneous exhalation, the author is inclined to side with those who hold that carbonic acid gas is given out by the skin, which thus contributes to the contamination of the air. He also leans to the belief that the cutaneous surface carries on the process of absorption as well as that of exhalation.

Upon the subject of the agency of the skin in the production of diseases, he furnishes much interesting information of practical application, under the heads of the general effects of cold, chief seats of diseases produced by cold applied to the surface, and influence of cold upon the various membranes and tissues. His chapter on the prevention of diseases by the regulation of the skin, and the protective measures, such as exercise, clothing, and cold and tepid bath, contains much useful instruction, which we cannot at present epitomize so as to present to our readers. G. E.

XIII. *Observations on the Healthy and Diseased Properties of the Blood.* By William Stevens, M. D. London, 1832. pp. 504, 8vo.

It is not our purpose on the present occasion to inquire into the merits of Dr. Stevens' work; this may form the subject of a future article; our object is to notice the attempt which he has made to appropriate to himself the merit of having suggested to Drs. Faust and Mitchell* their experiments on the penetrativeness of gases, the results of which have shed important light upon science and reflected great credit upon the authors. We were at first disposed to smile at Dr. Stevens' claims, and to trust for their refutation to his own statement, but as his claims have been admitted, and indeed urged with some pains in a recent work,† and repeated by the reviewer in our cotemporary, the London Medical and Physical Journal,‡ it seems proper to investigate at once their validity.

Dr. Stevens' statement is so diffuse, that it is impossible for us to transfer the whole of it to our pages. The two following paragraphs however exhibit the basis of his claims, the remainder of his exposition consists of little else than verbiage and repetitions.

"The experiments which prove the action of gases on each other, have lately excited an intense degree of interest among our professional brethren in the United States. I say lately, for it was only in the month of November, 1830, that two papers appeared there for the first time on this subject—the one is on the endosmose and exosmose of gases, said to be written by a Dr. Faust; the other is a paper on the penetrativeness of fluids, by Dr. Mitchell, Lecturer on Medical Chemistry in the Philadelphia Medical Institute. Dr. Faust's paper is dated on the 23d of August, and Dr. Mitchell's on the 18th of September, 1830. But their first experiment appears to have been made on the 21st of July; that is, a short time after I had mentioned the leading, and by far the most important fact of the whole, not merely to one, but to several individuals in that country." p. 96.

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* See this Journal for November, 1830.

† Notes to Drs. Hodgkin and Fisher's translation of Dr. Edwards' work on the Influence of Physical Agents on Life. London, 1832.

‡ December, 1832.

The following paragraph explains what this "*leading, and by far the most important fact of the whole*" is; as also the period at which it was mentioned.

> "I had previously to the commencement of his experiments, stated to an intimate friend of Dr. Mitchell's the leading and important fact; namely, the powerful attraction which oxygen possesses for carbonic acid, as well as the conclusions which I had drawn from this fact, relative to the agency of oxygen in the purification of the blood, by attracting the carbonic acid through the medium of the intervening membrane. The conversation I had with this gentleman was in Philadelphia, on or about the 15th of July, 1830; and when I add, that the gentleman to whom I had mentioned this important fact was afterwards, to my certain knowledge, present with Dr. Mitchell while he was performing his experiments on this subject, the reader may then form any opinion he may think proper relative to the source of the reflected light which had induced the Philadelphia writers so suddenly to commence their experiments to ascertain whether gases could or could not attract each other, even through the medium of dense membranes." p. 98.

The fact of having mentioned to a friend* of Dr. Mitchell's on or about the 15th of July, 1830, that oxygen has a powerful attraction for carbonic acid, an assertion unsupported, as it was by a single experiment, will perhaps be considered but a slender basis upon which to claim the discovery of the reciprocal action of gases through membranes, or even upon which to rest the assertion that that communication suggested to Drs. Faust and Mitchell their experiments. Independently of the experiments of Priestley, Dobereiner and Dalton, if the reader will refer to our No. for May, 1830, he will find that nine months before the visit of Dr. Stevens to this country, Mr. Graham had published the account of his experiments;† and that *two months before* the period so accurately fixed upon by Dr. Stevens as the date of the communication of his important discovery of the attraction of oxygen for carbonic acid, that Mr. Graham's experiments had been announced in this Journal in the following manner:—

> "*Reciprocal action of gases through animal membrane.*—It would appear from the following singular observation, made by Thomas Graham, Esq. Lecturer on Chemistry at Glasgow, in the course of an investigation respecting the passage of mixed gases through capillary openings, that endosmose acts upon *aëriform matter*, as it does upon bodies in the liquid state. *We feel every day more and more convinced that this property acts a most extensive and important part in the functions of the animal economy.*"‡

Whether the annunciation two months *subsequently*, that gases exercised a reciprocal action upon each other, would have had any *novelty* for us, the reader may decide. But Dr. Stevens made no such communication to us. We remember, however, that in one of the visits with which he favoured us, whilst in Philadelphia during the summer of 1830, that he mentioned a belief which he entertained, that oxygen had an *attraction* for carbonic acid, a belief, in support of which he then adduced no experiment, and which was so vaguely stated as to make no impression upon us; we certainly never repeated it to any one.

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* This friend, it is stated in the notes to Dr. Edwards' work, to have been the Editor of this Journal. p. 483.

† See Quarterly Journal of Science, for October, 1829.

‡ See this Journal for May, 1830. The No. was published on the 1st of May, and these observations were, of course, written some time previously.

On his return to Philadelphia in the latter end of October of the same year, Dr. S. mentioned the experiment he had tried at Saratoga, and we then informed him of Dr. Faust's and Mitchell's experiments, an account of which had been printed, though not published. Dr. Stevens appeared at that time to have no idea of the reciprocal action exerted by all gases upon one another, but referred the results of his experiment to the *attraction* exerted by oxygen for carbonic acid. His sole idea was that the oxygen *attracted* the carbonic acid through the membrane. He even now denies that the oxygen penetrates the membrane to go to the carbonic acid, (p. 92;) and thus whilst claiming the discovery of the reciprocal action of gases upon one another through a membrane, he actually denies such a *reciprocal* action.

We must also call attention to the fact, that Dr. Faust is not a Philadelphia writer, as stated by Dr. Stevens, and it is somewhat remarkable that Dr. Stevens should overlook this fact, inasmuch as in the title to the paper, the author is given as Edwin D. Faust, M. D. of Columbia, South Carolina—and again, to the date of the paper which Dr. Stevens quotes, is prefixed, Columbia, S. C. Now, this is not altogether unimportant, inasmuch as the distance between Philadelphia and Columbia, S. C. is so great, that had a letter been written on the earliest day fixed by Dr. Stevens for his communication, it could not have reached Dr. Faust in due course of mail until some days after the date of his first experiments. We had not the pleasure, however, of any personal acquaintance with Dr. Faust, and never addressed a letter to him except relative to a paper on malaria, published in our No. for May, 1830. We have also reason to believe that Dr. Faust had no acquaintance in Philadelphia, and probably never heard of Dr. Stevens, except perhaps as having taken up the internal iliac artery.

Dr. Faust, in the introductory remarks to his experiments, has stated the circumstances which directed his attention to the reciprocal action of gases upon each other through membranes. *He* lays no *claim* to *originating* the idea. *His* statement is *modest* and *unpretending*, and bears internal evidence of truth. He observes that the various researches into the endosmose and exosmose of liquids, accounts of which had been published in this Journal,* had convinced him that the facts were destined to become useful in their application, and that he was about commencing a series of experiments, when his attention was turned to another subject by the article in our May No. relative to the experiments of Mr. Graham.† Dr. Faust then started from Mr. Graham's experiments, and those who have read his lucid and philosophical paper, and will compare it with the confused, illogical, and incorrect observations of Dr. Stevens, written even after the latter had had the advantage of perusing the memoir of the former, will have little difficulty in determining to whom merit is due for throwing light upon the subject.

It is well known here that Dr. Mitchell devised in 1829 a method of forming gum elastic into very thin sheets, or bags, which excited considerable attention, and that balloons formed of these bags and filled with hydrogen gas, were exhibited to the American Philosophical Society, at the Philadelphia Museum, at Professor Hare's and Dr. M.'s lecture room, and in fact they became almost a common toy. Dr. M. states that he observed that these balloons, after a period varying from an hour to two days, descended, and the cause of their descent became a subject of investigation, and led him on to his subsequent experiments. Those who will read the account of these experiments* will easily decide whether Dr. Mitchell deserves any credit for them, or whether his laurels must fade before the brilliant annunciation of the 15th of July, 1830, that oxygen has an attraction for carbonic acid. With due deference, however, we would venture to suggest, that he who first said that an apple had fallen to the ground, has an equal claim to the merit of the discovery of universal gravitation.

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* The subject of endosmose and exosmose was much dwelt upon in the Vols. of this Journal, published in 1829 and 1830.

† See Vol. VII. p. 23.

We will not dwell further on this subject, and regret to be compelled, by our duty to our contributors, to make this exposition. Whilst, however, we cannot award to Dr. Stevens the merit he claims, we are unwilling to charge him with intentional misrepresentation, and are happy to testify to the zeal he displayed when in this country, in the investigation of the changes produced in the blood in our autumnal fevers, in cases of poisoning by the bite of the rattlesnake, &c.

Since the above was written, we have been favoured by a friend with the late edition, (4th,) of the Elements of Chemistry by Dr. Turner of the London University. The author has taken a very correct view of the subject under consideration, and done ample justice to our contributors, as will be seen from the following extracts.

> "It appears from the essays of Drs. Faust and Mitchell, that their attention was awakened to the permeability of membranes to gases, by the endosmose and exosmose of liquids described by Dutrochet, by an insulated example of a similar phenomenon in gases observed by Mr. Graham, and by some facts of a like kind noticed *long ago* by Priestley. Dr. Stevens also, as stated at page 96 of his late treatise on the blood, was aware that carbonic acid passes readily through animal membranes, when air is on the other side, applied that fact to the theory of respiration, and brought the subject under the notice of several men of science in New York, shortly before the publication of Drs. Faust and Mitchell. But the views of Dr. Stevens, though well calculated to elicit inquiry were vague and partial; and the American philosophers are entitled to the merit of advancing from the detached facts of others *to the establishment of a principle.*" p. 913.
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> "It would perhaps be premature to speculate on the cause of this singular property of gases, nor is it material for my present purpose to do so; but as the reader will naturally desire some explanation, the following which is nearly that of Dr. Mitchell may be given as most consistent with the known properties of matter." p. 911.
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> "The difficulty which formerly stood in the way of both theories of respiration, arising from the supposed impermeability of membranes by gases, has been *entirely* removed by the researches of Drs. Faust and Mitchell. It fully appears from their experiments, and *of the accuracy of their principal results, I am satisfied from personal observation, that animal membranes both in the living and dead subject,* both in and out of the body, are freely penetrable by gaseous matter." p. 910.

Had other critics possessed the acute and discriminating mind of Dr. Turner, we might, as we originally intended, have submitted the case on Dr. Stevens' statement.

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* See Vol. VII. p. 35, of this Journal.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *Professor Ehrenberg's discoveries relative to the Structure and Functions of the Infusoria.*—If the obscurity which involves many of the most interesting phenomena in human physiology be ever dispelled, it can only be by the lights furnished by comparative anatomy, and we therefore conceive that we cannot occupy a few pages better than in devoting them to an account of the discoveries of Professor Ehrenberg, of Berlin, relative to the structure and functions of the Infusoria. These discoveries constitute an epoch in that department of science, both from the capital discoveries already made as well as from the direction they give to future researches. The best account we have seen of these discoveries, is that by Dr. Gairdner, in the *Edinburgh New Philosophical Journal,* for Sept. 1831, and we shall make free use of it in making up the following sketch of the structure and functions of the Infusoria.

Our readers will perhaps be surprised at the mention of the structure and functions of animals, the discovery of whose mere existence has been until recently deemed the ultimum of zoological research, and regarding whom, the sum total of our knowledge has been hitherto confined to a few details on their external forms and active motions. Yet, in the midst of their transparent tissues, the German naturalist has, by a peculiarly ingenious method of observation, developed a highly complicated organization, which, with those who arrange the animal kingdom in a linear series, will remove them far from the extremity of the scale. The existence of a digestive, muscular, and generative apparatus, is established beyond doubt; and organs have been also discovered, which bear great analogy with the vascular and nervous systems.

Before entering into the detail of the organization of the Infusoria, it is proper to state briefly the method by which the organs are rendered visible. This consists in furnishing the infusoria with organic colouring matter for nutriment. Simple as this may appear, it was not until after ten years' observations, that Dr. Ehrenberg succeeded in selecting the fittest substances, and in applying them in the manner best adapted for the satisfactory exhibition of the phenomena. It was not until he used pure indigo, that these experiments succeeded in a desirable manner. Immediately on a minute particle of a highly attenuated solution of this substance being applied to a drop of water containing some of the pedunculated vorticella, (which are best adapted for the first observation,) and placed under the object glass of the microscope, the most beautiful phenomena present themselves to the eye. Currents are excited in all directions by the rapid motions of the ciliæ, which form the crown round the anterior part of the animalcule's body, and indicated by the movements of the particles of indigo in a state of very minute division in different directions, and generally all converging towards the orifice or mouth of the animal, situated, not in the centre of the crown of ciliæ, but between the two rows of these organs which exist concentric to one another. The attention is no sooner excited by this most singular and beautiful phenomenon, when presently the body of the animal, which had been quite transparent, and bearing much resemblance in aspect to some of the marine Rhizostomæ, becomes dotted with a number of distinctly circumscribed circular spots, of a dark blue colour, exactly corresponding to that of the moving particles of indigo. In some species, particularly those which are provided with an annular contraction or neck, (such as the *Rotifer vulgaris,)* separating the head from the body, the indigo particles can be traced in a continuous line in their progress from the mouth to these internal cavities.

It is requisite in these experiments to employ colouring matter which does not chemically combine with water, but is only diffused in a state of very minute division. Indigo, carmine, and sap green, are three substances which answer very well the necessary conditions, and are easily recognised by the microscope. But whatever substance is used, we must be very particular that it contains no lead, an impurity which very frequently enters into the colours of commerce.

The microscope which Dr. Ehrenberg has used in all his investigations is one constructed by Chevalier of Paris; it possesses a power of 800. In very few cases, however, is it necessary to use this high power, and only to demonstrate the existence of an internal cavity in those species which do not exceed from 1-1500th to 1-2000th of a line in diameter, such as the *Monas termo, atomus,* and *lens,* and which almost elude the power even of so powerful an instrument. In almost all cases, a power of from 300 to 400 is sufficient; and Dr. Ehrenberg has made all his observations and drawings of the structure of the *Hydatina senta* with a power of 380.

In conformity with the great axiom of scientific observation, to measure every thing which is capable of measurement, Dr. Ehrenberg has not neglected to express in numbers the dimensions not only of the totality, but also of the integrant parts of these beings, placed as it were at the verge of organized nature. For this purpose he uses a glass micrometer, constructed by Dollond, which gives directly the ten-thousandth part of an inch, and permits of a much smaller quantity being correctly estimated, as it contains the astonishing number of 400 equal parts distinctly cut in glass within the space of half a line. By means of a micrometer screw, which has been since constructed by Pistor of Berlin, he has been enabled to measure directly 1-48000th of an inch, or 1-4000th of a line, a degree of minuteness which is never necessary in actual practice.

1. *Digestive System.*—By the use of colouring matter in the way above-mentioned, a digestive system has been demonstrated in *all* the genera of this class of animals, distinctly characterized by Müller. This fact Dr. Ehrenberg states in the following proposition: "All true infusoria, even the smallest monads, are not a homogeneous jelly, but organized animal bodies, distinctly provided with at least a mouth and internal nutritive apparatus." In none has the cuticular absorption of nutritive matter ever been observed, which had been the opinion of all previous writers upon the subject, not from any positive observations, but merely from their inability otherwise to explain the nutrition of these animals. Generations of these transparent gelatinous bodies may remain immersed for weeks in an indigo solution, without presenting any coloured points in their tissue, except the circumscribed cavities above referred to; and when in a state of activity, the minute particles of indigo and carmine are seen to hurry rapidly over the whole surface of their transparent bodies, in order to reach the mouth, generally situate at one or other of their extremities. Indeed there is no necessity of having recourse to such a supposition, when we can clearly see the prehension of colouring particles, their reception into a mouth, and conveyance from thence into an internal stomach or stomachs.

The alimentary canal presents, as in the other classes of the animal kingdom, the utmost variety in respect to form, situation and degree of complication. It is in the *Monas termo, pulvisculus,* and other larger monads, simply a round sac in the centre, and occupying the greater part of their bodies. In the genera

Enchelys, *Paramœcium*, and *Kolpoda*, it assumes the form of a long intestinal canal, traversing the greater part of the body, and at times convoluted in a spiral manner, which is furnished with a great number of cæcal appendages, or stomachs; this singular disposition, of which no other example occurs in the animal kingdom, is particularly distinct in the *Leucophrys patula*. That these blind sacs are real stomachs, and do not at all correspond to the cæca of other animals, is evident from the fact of their being filled with colouring matter immediately on its being received at the mouth, or anterior orifice of the canal. The tubes which connect these sacs to the main canal of the intestine, vary very much, both in length and in diameter, as well among the different cæca, as in the same one at different times, being usually in a state of great contraction, and at times scarcely perceptible when the cavity to which it belongs is empty, and may be supposed not to be in a state of activity. We can count from 100 to 200 of these sacs in the course of the intestine of the *Paramœcium chrysalis* and *aurelia*. When they are filled with colouring matter, the common intestinal tube is usually quite empty and transparent; this, joined to the bluish, reddish, or greenish tint which they often assume when empty, may have been the reason that these sacs were mistaken by Müller for ova, and by Schweigger for internal monads still adhering to the parent trunk. In other infusoria, as the *Rotifer vulgaris*, the alimentary canal is in the form of a slender tube, and extending nearly the whole length of the body, and terminating at its anal extremity in a dilatation or cloaca for the reception of the ova and the male seminal fluid, previous to its termination at the surface of the animal. Others of larger dimensions, as the *Eosphora najas* and *Hydatina senta*, and in general all the natural group of the *Rotatoria*, possess a single cavity of considerable size and oval form, situate in the anterior part of the body; the *Zygotrochis nudis* would seem to form an exception to the general rule of this division; for this animal, when filled with colouring matter, presents a slender, spirally convoluted intestine in the centre of the body. In this animal also, the posterior cloacal dilatation is enlarged into a considerable cavity, which can retain the colouring matter for some time previous to its being discharged by the anus.

The number of stomachs varies no less than their form. The whole tribe of the *Rotatoria*, as already observed, possess but a single cavity. In the *Monas termo*, four can be reckoned.

The number of sacs, which are so many distinct digestive cavities, although connected together by a common tube, varies from 1 and 200 down to 36 in many *Vorticellæ*. The largest number is in the *Paramæcium chrysalis*, Müll., where it amounts to 120, and yet there is ample space for still more.

The *anus* is easily distinguished from the mouth, when the animal is filled with colouring matter, by its discharge from this orifice, in large irregular coherent masses, very different in appearance from the minute state of division in which it enters by the mouth. Its position varies exceedingly; in the greater number, such as the *Hydatina senta*, *Rotifer vulgaris*, and *Eosphora najos*, it opens towards the posterior extremity of the animal; in the first of these it is on the back. In the *Kolpoda cucullus* it opens into the concave surface of the animal, close to the mouth, from which it is only separated by a tongue-shaped eminence. In some of the spirally pedunculated vorticellæ, its disposition is very singular, opening along with the mouth into a common fissure, which is not situate in the centre of the circular ranges of ciliæ which surround the anterior extremity of the body, but towards the margin, between two of these concentric circles.

The *mouth* merits the notice of the systematologist, from the very precise characters which he can draw from thence for his subordinate divisions. This organ reaches its greatest complication in the *Hydatina senta*, where it consists of an orifice opening in the centre of a globular head, and provided with a pair of serrated mandibules, each resembling somewhat the single mandibules of some of the mollusca, such as the common *Helix pomatia*, or those of the echini.

When the animal is in the act of taking its food, these mandibules are in perpetual motion, opening and shutting with great rapidity, to absorb the colouring particles brought within their reach by the currents excited by the motions of the ciliæ. This very singular organization is certainly one of the most curious phenomena visible in their whole structure, and is perhaps one of the most important, as showing so close an approximation to animals far removed from them in the zoological series. Each mandibule in the species which I examined, possessed five distinct teeth, but the number varies from two, three, as far as six. Dr. Ehrenberg has since succeeded in demonstrating their real nature, by the use of very fine foliæ of mica, (the whole animal is not more than one-eighth of a line in length,) and has come to the conclusion that they are separate, simple, hard bodies, enveloped with a fleshy covering, which are ingrained into one another like the fingers of the hands when joined.

The mouth of the other infusoria is a simple unarmed opening, surrounded more or less closely with a greater or less number of ciliæ. Its position generally determines their anterior extremity. In the genus *Paramæcium*, however, it is in the middle of the length of the animal. The *Kolpoda cucullus* possesses a sort of lip surrounding its margin.

The ciliæ play a very important part in the economy of this class of animals. They may be considered as the principal organs of taste, of touch, and of propulsion. When the animal is at rest, they are often quite imperceptible, but on the addition of a small proportion of colouring liquid to the drop of water, they become very apparent, being in a state of great activity, seeming to be the principal agents by which they excite those currents which afford so beautiful a spectacle under the field of the microscope.* In the *Monas pulvisculus,* and other larger monads, their number amount to 10 or 20, and we may from this conclude that they exist even in the smallest monad. They sometimes surround the mouth in a single row, *(Vorticella convallaria, Rotifer vulgaris,)* sometimes in a double row, *(Vorticella citrina;)* occasionally they extend in regular lines, or are irregularly dispersed over the whole surface of the body. The former disposition occurs in the *Leucophrys pyriformis* and *patula,* the latter in the *Actinophrys sol.* They occupy, in other cases, only one side of the body, *(Kolpoda cucullus.)*

An *œsophagus* can only properly be said to belong to those which, like the *Eosphora najas* and *Hydatina senta,* possess a notable contraction between the mouth and the stomach. This is especially distinct in the latter, where I have distinctly traced the passage of individual coloured globules along this narrow canal from the mouth into the intestine.

Perhaps this is the most appropriate place to notice an organ of a very obscure nature, which Dr. Ehrenberg dignifies with the name of a pancreas. It is in the form of two kidney-shaped, grayish-white, glandular-looking, transparent bodies, which are placed on each side of the upper extremity of the intestine, firmly connected to, and closely embracing it. Dr. Ehrenberg regards them as bearing a greater analogy to the pancreas than to the liver of the higher animals, from their colour, form and connexions. They must, however, be left to further inquiries.

2. *Muscular System.*—A fibrous muscular tissue being the proper agent of all voluntary contraction in the animal kingdom; we might, *a priori,* expect its existence in the class of infusoria, which are so remarkable for the rapidity and energy of their movements of propulsion and translation. In the former they can only be compared with fishes, and in the latter with insects. Contractility of tissue can never explain those active voluntary efforts by which they avoid obstacles when swimming in myriads in a single drop, convey the nutriment towards the mouth,

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* One of the most favourable moments for seeing these ciliæ to advantage, particularly in those species in which they invest the whole surface of the body, is when the drop of fluid under the microscope is nearly dry, when they may be seen elongated to their utmost, in a state of great activity; or if the animal be nearly expiring, in a state of rigid erection.

and perform the act of deglutition. Previous, however, to Dr. Ehrenberg nothing like the muscular fibre had ever been attempted to be shown in these animals.

As yet, from their extreme tenuity, no distinct fibres have been detected in the second and more minute division styled by Cuvier Homogeneous Infusoria, and in the new system of Dr. Ehrenberg *Polygastrica;* although from their extremely vigorous contractions, as well as from their presence in the division of the Rotatoria, we are entitled to infer their existence. In this last, distinct fibres are perceptible in the *Eosphora najas, Rotifer vulgaris, Philodina erythrophthalma* and *Hydatina senta.*

We shall select the muscular system of the latter, the *Hydatina senta,* as a specimen, from its greater distinctness and complexity. The perfectly transparent gelatinous body of this animal, when seen through the microscope with a power of 380, appears to be traversed longitudinally by several narrow bands of fibres, perfectly transparent, and of a grayish-white colour. When the animal throws itself into its violent lateral contortions, these fibrous bands are observed to shorten, become broader and thicker, (from their slightly diminished transparency,) on the side towards which the contractions are made; and on the convex to become so extremely elongated and attenuated as to be almost, in some cases, quite imperceptible. The real muscular nature of these organs, and that they are the real agents in effecting the motions of the animal, is thus placed beyond all doubt. These muscles never lose their apparent state of tension, which they would undoubtedly do on the contractions of the animal, if their nature was of another description; and when the two extremities of the body are equally approximated to each other, none of the bands become invisible, but all increase to nearly twice their former breadth, with a corresponding diminution of their transparency.

The envelope of the body of the hydatina consists of a double transparent membrane, the two layers of which are in contact with, and scarcely distinguishable from, each other, when the animal is in a state of repose. But, upon the contractions of two or more of the muscles, the internal membrane into which they are inserted becomes separated to a greater or less distance from the external. During the whole of these phenomena the stomach, ovaries, and the whole of the viscera, are perfectly visible through the transparent muscles.

These principal muscles are four pairs, which take their origin from the opposite ends of the animal, and proceed in a radiated manner to be inserted by broad striated bands near the middle of the body, (between the fourth and fifth pair of twigs given off from what Dr. Ehrenberg calls the great dorsal vessel.) The four upper or anterior muscles rise by narrow insertions from the junction of the head with the body at the root of the rotatory organs; the four posterior or inferior, from the point of insertion of the bifid tail into the body. The extent of insertion of these muscles is much greater in the *Eosphora, Philodina* and *Rotifer,* than in the *Hydatina;* in them it reaches at least from the second to the sixth of the above-mentioned transverse twigs.

These great longitudinal muscles are distinct to the most unpractised eye, but Dr. Ehrenberg views as of a muscular character, 1. The seventeen sections of the rotatory organ in the Hydatina, which must be the principal agents in directing the motions of the ciliæ; 2. A contraction or sphincter near the extremity of the cloaca; 3. A striated organ behind the cloaca, which he considers, from its situation, as an accelerator of the seminal fluid, a *musculus ejaculatorius.* In none of these, however, except the last, can the existence of a fibrous tissue be considered as beyond a doubt; though, from their situation, it is more than probable that this is their true nature. All of these parts seem to be attached to the inner layer of the external double membrane, and to be unconnected with the subjacent viscera. It is not improbable that the tail may possess some proper muscles, as its motions are not performed laterally in common with the trunk, but by an alternate retraction and elongation.

3. *Generative System.*—The partizans of the *generatio spontanea* vel *primitiva,*

who so long stood their ground in the class of Entozoa, after being forced to relinquish this position, by the discovery of the ova of these parisitic animals, took refuge in the darkness and obscurity of the microscopic infusoria, where they were almost secure of an undisturbed possession, while there was nothing known concerning them except as a homogeneous mass of transparent jelly, endowed with a few active motions; and where their negative arguments could only be attacked by analogical reasonings.

The candid and impartial mind of Müller himself, too rigid an observer to be seduced by the allurements of theory, considered the infusory animals as furnishing an incontrovertible argument for the existence of certain living forms, which are neither of oviparous nor gemmiparous origin, but derive their existence immediately from a certain indestructible living generative energy inherent to all matter;—for this very plain reason, that he had never witnessed the secrets of their origin. Such a conclusion, though perhaps too hasty, is allowable in such an observer. When, however, we see other men of distinguished talent, such as Treviranus and Oken, take up the question, where, if it were possible, they ought to have ended, and assume at once the existence of a mysterious power inherent in organic matter of generating infusory and other molecular animalcules, which form by their aggregation all organic living forms, and into which the latter are, at the cessation of their proper vitality, again resolved; we cannot help referring them to the well-known maxim of Bacon, that "Homo naturæ minister et interpres tantum facit et intelligit quantum de natura ordine re vel mente observaverit: nec amplius scit, aut potest."

The observations of Dr. Ehrenberg have not only given an additional extension to the great principle of Harvey, *omne vivum ex ovo;* but have, by a connected train of ocular demonstration, proved the existence in this class of the whole three species of generation, the viviparous, the oviparous, and the gemmiparous, and even of the simultaneous exercise of two of these in the same individual, at different epochs of its existence. Waiving at present the corroboration which this might give to the view of infusory animals forming a parallel series to their more apparent prototypes, let us proceed to state shortly a few examples of each of these varieties.

In the interior of the *Rotifer vulgaris* we often see young animals of a diminutive size, (that of the parent varying from ¼th to ⅛th of a line,) perfectly formed, and near the period of exclusion, which already possess the two red points, (eyes,) near their anterior extremity, and a distinct mouth and head. They assume various postures in the interior of the parent trunk, being at times coiled up in a spiral form, or extended to their whole length. These same fœtus, if we may so call them, Dr. Ehrenberg has seen excluded in a living state from the parent. All the individuals of the *Hydatina* are hermaphrodite, possessing the completely formed male and female organs. The female consists of an ovarium, which, when in the unimpregnated state, is an oval perfectly transparent bilobed bladder-like body, closely embracing the lower part of the intestinal tube. When in an impregnated state, it increases very much in size, being augmented by the addition of two or more oval appendages, so that the whole mass fills the greater part of the posterior half of the body of the animal. When quite ready to burst it assumes a greenish-gray colour. These rounded bodies communicate by a canal, scarcely perceptible in the unimpregnated state, broad and distinct when nearly ripe, with the cloacal dilatation formerly noticed as existing near the anal orifice of the intestine. That the ova are not internal germs, an opinion entertained by many older observers, such as Lamarck and others, is proved not only from the above-mentioned development and connexions of their containing vesicles, but also by the distinct existence of the three substances which in the ova of the Entozoa, M. Rudolphi considers as the chorion, allantois and amnion. In the centre of many ova there can be recognised a darker point, which is either the embryo, or cicatrix in which the latter is developed.

The adult Hydatina possesses, besides, two organs which Dr. Ehrenberg considers as the male organs of generation, but the real nature of which is a little more doubtful than that of the preceding. They resemble very much in form the milt of fish, consisting of two elongated bodies, extending nearly the whole length of the animal, exterior to the ovaria, broader towards the head, diminishing towards the tail. They terminate, (a strong corroboration of this view of their true nature,) in a number of spirally convoluted tubes, which finally open by two separate canals immediately behind the oviduct. These spiral convolutions are enveloped by an organ of a very singular nature, the function of which is very obscure: it is oval, transparent, remarkable for its irritability and sudden changes of form; at one time swelling out into a vesicular form, at another contracting into a small glandular looking organ. Dr. Ehrenberg at one time considered it to bear some analogy to an uterus; but it is more probably connected with some office in applying the seminal fluid to the ova previous to the exclusion. This organ is wanting in the *Rotifer* and *Philodina*, where the male apparatus otherwise resembles very closely that of the Hydatina.

In the *Kolpoda cucullus*, the parent animal excludes the ova in the form of extremely minute globules, bearing much similarity to some of the species of the genus *Monas*, connected by a number of filaments interwoven together in a reticular form. In an animal 1-24th of a line in diameter, that of the ova was 1-1000th of a line. The young Kolpoda were 1-144th of a line before they were distinctly seen to excite currents, and swallow the coloured particles. In the genus *Vorticella* there seems to be a combination of the oviparous and gemmiparous generations. The single species *Convallaria*, has, from their entire ignorance of its mode of development, been subdivided into no less than six distinct genera, by different observers, according to the variety in its form at different stages of its existence. It first appears in the form of minute points, not more than 1-1000th of a line in diameter, scattered upon the peduncles of a group of adult Vorticellæ. After a time these minute points enlarge in size, and send out delicate peduncular prolongations to the larger adult roots, in which state Schrank styled them *Vorticellæ monedicæ.* When still more advanced these peduncles become coiled up in a spiral form. And when they may be considered as having reached their complete organic development, though still much inferior in size to what they afterwards attain, the usual currents may be observed in the coloured solutions in which they are immersed. The same species propagates itself by germs, on the separation of a part of its body from the parent trunk. This is performed in three different ways, each of which has been dignified with the title of a distinct form.

The first is the longitudinal division in which the animal divides itself into two nearly equal halves. A fissure first appears traversing the whole length of the body; this becomes deeper anteriorly, where two horns are now visible, each provided with a distinct set of ciliæ, and a mouth, recognisable by the two currents of colouring particles directed to the apices of the two horns. The fissure becomes deeper and deeper, till they form two distinct, perfectly formed animals, attached to the apex of a single peduncle; one of these is soon detached from the latter, when it agrees in form exactly with Lamarck's genus *Urceolaria.* When the same animal moves with the hinder part forward, it forms Schrank's genus *Ecclissa;* when the conical basis by which it was attached to the peduncle, has not quite disappeared, it forms Bory de St. Vincent's genus *Rinella;* and when a little broader and more bell-shaped, with apparently only two ciliæ, it is the genus *Kerobalanus* of the same author; when fully provided with ciliæ, without any remaining vestige of the conical appendage, it is the genus *Craterina.* This Vorticella also passes through the same phases of a *transverse* division into two equal independent animals. The third method is the true gemmiform division, as in the Hydræ and Planariæ, in which a small bud is given off from the posterior surface of the animal, which is provided with ciliæ, and when separated from the parent trunk, is still of a very diminutive size.

Such are a few of the observations on the generation of these animals, from which it will be seen that they are but in their commencement, and that much remains to the patience and labour of future observers.

4. *Vascular System?*—The existence of a digestive, a muscular, and a generative system of much complexity, and very far from what we might consider as their simplest expression, may now be viewed as an ascertained fact with regard to infusory animals. The existence of the two systems which remain for our attention, viz. the vascular and nervous, is as yet somewhat problematical. The organs on which Dr. Ehrenberg confers these appellations, are very apparent, but much doubt exists with regard to their real functions.

What has been denominated a vascular system is distinctly visible only in the *Hydatina senta.* Traces of a similar arrangement are now and then perceptible in the *Eosphora,* in particular positions of the animal, but they quite disappear when the integuments are in a state of strong tension. In the former, a series of transverse lines of a white colour, and inferior transparency to the rest of its body, succeed one another at regular intervals, from the head towards the tail. These transverse striæ might at first be taken for muscles, but they differ from these entirely in their aspect and connexions. They are nine in number, exactly parallel to, and nearly at equal distances from, each other. At first sight they seem to be complete rings encircling the whole body; but, upon a closer inspection, they are observed to diminish in breadth, and finally vanish on approaching the inferior or abdominal surface of the animal. On the contrary, they augment in diameter towards the back, where they all terminate at right angles, in a line, of an exactly similar appearance to themselves, running in a longitudinal direction from the head to the tail. This longitudinal line or vessel is nearly twice the caliber of any of its tributary transverse twigs.

It will be observed, that the disposition of this main dorsal trunk, with its collateral branches, is almost exactly that of the vascular system of the Ascidia, so beautifully demonstrated by M. Savigny, which is a strong argument for their being of the same character. No motion of an internal fluid is discernible in their interior, nor has any pulsation, analogous to a heart, been ever observed. Both these phenomena, which would decide the question as to their true nature, Corti asserted that he had observed in the *Rotatoria* and *Brachionus,* but he was deceived by the tremulous motion of the canal, leading from the mouth to the œsophagus. The same was the case with Gruithuysen, who mistook the motion of the intestine in the *Paramæcium aurelia* for that of a sap-like fluid. It is worthy of note, that these white striæ are attached to the internal, not to the external tunic of the integuments.

5. *Nervous System?**—This name is given to a series of six or seven round glandular-looking grayish bodies, which envelope the upper or dorsal part of the œsophagus of the *Hydatina.* They are closely connected together, and are distinguished from all the other viscera of the body by their darker tint. The uppermost of these bodies, (ganglia,) or that situate in the mesial plane, is much larger than the rest, and gives off, from its apex, a slender branch which proceeds upwards towards the integuments at the back of the neck a little before the second pair of vascular twigs, where it forms a slight enlargement, (ganglion;) it does not stop here, but returns back and unites again, not with the large ganglion from which it was originally given off, but in one of the adjacent smaller ones. A complete circle is thus formed, bearing some resemblance to the nervous circle, which encircles the œsophagus of the mollusca, except that in this case the whole circle is situate on the dorsal or upper side of that canal. From the point of contact of this nervous circle with the dorsal vessel, it gives off two very slender twigs forward to the anterior part of the head, where, in other forms of the Rotatoria, such as the *Rotifer vulgaris,* the two red points, (eyes,) are situate. In some, such as the *Eosphora najas,* a single large red point is situate on the back of the neck, in the exact position

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* According to all our ideas of known physiological laws, the existence of active voluntary motion presupposes the necessity of an animating nervous system. Hitherto, however, no attempt had ever been made to prove its existence. But here again in these animals, excluded by their delicacy and minuteness from the ordinary means of anatomical investigation, the transparency of their tissues, as it has enabled us to discover the existence of a muscular, has no less assisted us in the more than probable discovery of its necessary appendage, a nervous tissue.

of the ganglion at the apex of the circle.[*] The above-mentioned large mesial œsophageal ganglion, (brain,) sends off posteriorly another branch of much larger size, backwards along the abdominal surface of the animal, which closely adheres to the internal layer of its double envelope.

That these different filaments and ganglia, to which we have given the name of nerves, are not muscles, is evident from their form, their mode of insertion into the integuments, and because in the contractions of the animal they are not shortened, but assume a serpentine form, being apparently quite passive. They are not vessels, because no pulsation nor motion of a contained fluid has been hitherto perceived through their transparent tissues. If they are not organs of an entirely unknown nature, the whole analogy of their form and position, compared with that of the nervous system in other invertebrate animals, favours the idea of this being their true nature.

We may here consider as appendages to the nervous system, those coloured points situate in the anterior part of the head of these animals, and most usually on the dorsal surface, which have been considered as eyes. As already noticed, the first discovery of these organs was made in 1816 by Nitsch, who saw in the *Cercaria viridis*, (now referred by Dr. Ehrenberg to the genus *Euglenu,)* three black scaliform points. In the *Rotifer vulgaris*, their pigment is of a red colour, and they are three in number, two small ones at its anterior extremity, and a single larger one at the nucha in the situation of the apex of the above-mentioned nervous circle in the *Hydatina;* and it is very probable that the two filaments, which in the latter animal are sent forwards from this ganglion, or even the ganglion itself, subserve the purposes of vision. The number, disposition, and colour of these points is the same in the *Eosphora najas*, where the mesial eye is still larger and more distinct. In the *Philodina erythrophthalma* their colour is the same, but they are only two in number, (the most common disposition in this class,) much smaller, and situate more posteriorly. In the *Lepadella ovalis* one only is visible of considerable size in the mesial situation of the large one of the Eosphora.

2. *Attenuation of organized matter.*—Some idea may be formed of the high degree of attenuation of which organized matter is susceptible from the following facts. By Professor EHRENBERG's measurements, the *monas termo* does not exceed 1-1500 to 1-2000 of a line in diameter; and he states that the four stomachs did not occupy half the bulk of the animal. Each stomach must therefore be about 1-6000 of a line in diameter. Some of Professor Ehrenberg's observations tend to prove that the genus *monas* and some others are only the young state of some *kolpodæ, paramæciæ, &c.* But supposing them to be perfectly developed animals, and that their ova bear the same relation to the size of their bodies, which those of the *kolpodæ* do, that is, 40 to 1, we must conclude the existence of young monads which have a diameter of only 1-60000 of a line, or 1-720000 of an inch. Each of these monads must possess a stomach and organs passing in dimensions the power of numbers, and certainly giving us very magnificent ideas of the grandeur of organized nature.—*Ibid.*

PHYSIOLOGY.

3. *Physiological Investigations arising from the Mechanical Effects of Atmospherical Pressure on the Animal Frame.*—The weight of the atmosphere, though not constantly the same, varying from 1-12th to 1-15th of its whole weight,[†] on

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[*] The best view of the disposition and appearances of the œsophageal ganglia, is got from the dorsal side of the animal, in a line with the great dorsal vessel. The nervous collar given off from the brain, is however best seen on a lateral view.

[†] These variations are gradual, so that it requires some days or weeks before the weight passes from one extreme to the other.

an average amounts to fourteen and a half pounds on each square inch of surface; and to this pressure the human body in common with all other objects is subjected. The whole surface then of a middle-sized person will have to support from fifteen to twenty tons of pressure, all acting inwards and tending to compress the body into a less compass. Now the question arises, how is it that the animal frame is utterly insensible of the whole, or of any part of this enormous pressure upon it. Mr. Dalton, in a late volume, (Vol. X.) of the Manchester Memoirs, has attempted a solution of this question, and we shall lay before our readers the views he has presented.

It is pretty well known that the *specific gravity* of living men in general, is less than that of water.* Mr. Robertson, formerly librarian to the Royal Society, found that if ten men taken promiscuously, one of them was a little heavier than water, and two nearly the same weight as water; two others were only about .8 the weight of water—and the other five were of intermediate specific gravities. The average of the ten was—height, 5 ft. 6¾ ins.—weight, 146 lbs.—specific gravity, 1.891—bulk, 2.618 cubic feet. From this Mr. Dalton thinks that it may be safely inferred, that the body of a full-grown living man, when plunged over head in water, will be found to average nearly .9 of the weight of an equal bulk of water.

"It is remarkable," observes Mr. Dalton, "that all the component parts of the animal frame, as least of the human subject, are severally specifically heavier than the whole body, with the exception of air.—Bone, muscular flesh, blood, membrane, &c. are all heavier than water: animal fat is perhaps the lightest of the components, but even this is heavier specifically than the whole man upon the average.—Bone from the leg of a calf I found to be 1.24 specific gravity. The lean of beef, (raw,) I found 1.045 specific gravity.—Blood is from 1.03 to 1.05 specific gravity according to circumstances:—on the whole, the solid and liquid parts of the body, examined after life is extinct, would appear on an average to be somewhere about 5 per cent. heavier than water.

"That part of the volume of man which is exclusively occupied by air, and which may therefore be considered as adding nothing material to the weight of the body, consists of the air-tubes and air-cells of the lungs, the trachea or wind-pipe, the mouth and other appendages. It is not easy to ascertain the medium volume of air in the lungs of any individual. Messrs. Allen and Pepys found the air remaining in the lungs of a man after death somewhat exceeded 100 cubic inches. I found formerly that after a full inspiration I could blow out 200 cubic inches of air from my lungs, but was then quite exhausted. My ordinary inspirations and expirations amounted each to about 30 cubic inches.†

"Judging from the above facts and considerations I should be disposed to conclude that the medium volume of air in the lungs of a middle-sized person would not be less, but rather more than 100 cubic inches. Besides the lungs there are no other receptacles for air, I believe, in the body except the stomach and bowels, which are occasionally more or less inflated with portions of air either from the atmosphere or from other sources. If we allow 150 cubic inches for the volume of air, contained in the whole man when entirely immersed in water, it will be as fair an estimate perhaps as can be made. But it may be imagined by some that the whole substance of the body is pervious to air; that the skin, the flesh, the blood, and even the bones, may be imbued with air, somewhat in the same manner that water is, and yet have no cavities or cells in which the air is collected into a visible volume. Whether such an idea has ever been entertained or discussed I am not aware; but I presume no one has succeeded in determining either the nature or the quantity of the air so enveloped in the system. We shall now examine how far such a notion is countenanced by the preceding statement of facts.

"According to the preceding table of Robertson the average bulk of the ten men was 2.618 cubic feet = 4500 cubic inches nearly; but of this volume 150 inches according to the above estimate were air, and the remainder 4350 inches were solid and liquid parts of the body. Now the average specific gravity of those parts of the body has been estimated above at 1.05 when examined as dead matter; this would make their weight equal to 4567 cubic inches of water; whereas it was found by actual weighing to be 146 lbs. as per table = 4044 cubic inches; hence the observed weight was less than the calculated weight, a portion equal to the weight of 523 cubic inches of water, or more than 1-9th of the whole weight of the body."

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* Phil. Trans. Vol. 50.—Hutton's Dict. Sp. Gr.

† Memoirs Vol. II, (new series, p. 26.)

This discrepance demands investigation. Mr. Dalton thinks that it is not likely that Robertson's table of the specific gravities of men give too low an estimate; be this as it may, it certainly is not true as stated by him that the human subject generally floats in water *until the lungs become filled with that element.* Dr. Cullen in many dissections found no water in the lungs; and Dr. Goodwyn's experiments which are conclusive on this subject, show that only a very small quantity of water enters the lungs of drowned animals.* The specific gravities of the component parts of the body appear not to be overrated—and it will hardly be contended that the lungs of a middle-sized man will hold at a medium state of inflation six times the volume of air Mr. D. has assigned.

Upon the whole, Mr. Dalton is "inclined to believe the true explanation of the difficulty will be found in this, that the whole substance of the body is pervious to air, and that a considerable portion of it constantly exists in the body during life, subject to increase and diminution according to the pressure of the atmosphere, in the same manner as it exists in water: and further, that when life is extinct, this air in some degree escapes and renders the parts specifically heavier than when the vital functions were in a state of activity.

"The facts that water absorbs air of all kinds, that the quantity of air absorbed is proportional to the pressure and density of the gas, whether it be alone or mixed with other gases, and that certain laws of equilibrium take place, by which water acquires that state in which it is disposed neither to give out nor take in any more gas, have been abundantly proved by Dr. Henry and myself. M. Saussure has shown the like for other liquids, and for a great number of solid bodies. It may be seen too in my Chemistry, vol. 1st, page 236, that a bladder, which is generally considered as an animal membrane least pervious to air, may be filled with one gas, and being some time exposed to the atmosphere, it will be found to continue full blown as at first, but the contents will be chiefly atmospheric air. Messrs. Allen and Pepys in their ingenious and excellent essays on respiration, have proved that when a Guinea pig, or a pigeon is confined, for an hour, more or less, in a mixture of hydrogen and oxygen gases in proportion as 78 to 22, a large portion of azotic gas is found in the residue and an equal portion of hydrogen disappears. They ascribe this change to effects of respiration; but it appears to me more probably due to the principle we are advocating; namely, to the egress of azote from the whole body, and the ingress of hydrogen in lieu of it, in consequence of withdrawing the external pressure of the former and substituting that of the latter.

"When the palm of the hand is placed over the top of the receiver of an air-pump, and the air is exhausted, the pressure of the air on the outside is scarcely felt, but the inside is swollen and feels as if it was drawn or sucked into the receiver. Thus the sensation is on the inside and not without; the reason is, there is no change of pressure on the outside; but there is within, and the consequence is a tendency of the air in the hand to escape into the receiver, which occasions the pain and swelling. It is thus also that the issuing of blood in the surgical operation of cupping is effected.

"Though it does not seem of much consequence what the pressure of the air may be on the animal frame, within certain limits, yet sudden changes must always be accompanied with uneasy sensation. Climbing mountains, or ascending in a balloon, removes a part of the atmospheric pressure from the body; this causes the air in the body to tends outwards, and sometimes occasions bleedings. To supply oxygen to the lungs a greater volume of air must be breathed, and this seems to produce an acceleration of the pulse. On the other hand, by descending thirty or forty feet deep into water in a diving bell, the pressure of the air upon the body is increased inwards; pains in the ears are felt from the difficulty of suddenly restoring a disturbed equilibrium; but if the descent is slow and interrupted, time is given for the air to enter the pores, and the pain is less sensible. To what limit warm-blooded animals could bear the rarefaction of air so as to subsist, has not, that I am aware of, been determined with much precision. Ascents in balloons have been made till the atmospheric pressure was reduced more than one-half. Formerly I found that a mouse could subsist in air of ¼ of atmospheric density, and seemed not to have suffered much; but upon reducing the density below ¼, the animal was convulsed and expired immediately, notwithstanding the air was instantly admitted.

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* See article Asphyxia in the forthcoming Medical Cyclopedia.

"If the view we have expanded in this essay, in regard to the action of aërial pressure on the animal frame, be correct, it may be inferred, that the pressure admits of great latitude; perhaps an animal could subsist under the pressure of ½ an atmosphere, or of 3 or 4, or more atmospheres. The uneasiness and danger would be found in the quick transition. If time is allowed for the air to enter the body, and to escape from it, the transition is gradual, and the sensation arising from it imperceptible. The animal economy would be adapted to it, like as in the transition from a cold to a warm climate. It may hereafter be found, what length of time is sufficient to adjust the equilibrium, and whether this subject is any way connected with certain diseased states of the body. As far as regards the absolute pressure on the body, and our insensibility of it generally, this question will be met by the argument, that the air within the body, by its elasticity, sustains a corresponding pressure from without; but this only accounts for our alleviation from a small fractional part of the whole exterior pressure. The greater part must still be supported by the body; and we must have recourse to the great incompressibility of matter, to account for our insensibility of pressure. Canton found that water, pressed by one atmosphere more than ordinary, only exhibited a reduction of 1-21740th part of the whole; if the same rate, applied to the compression of the human body, the reduction or compression of the size of a man, 4500 cubic inches, would only be 1-5th of a cubic inch, for the weight of an additional atmosphere. Now as the body consists of solids and liquids of almost incompressible matter, and there is only a small part of the volume consisting of elastic fluid that is compressible, no material change of volume can take place, but on the sudden transition from one atmospheric pressure to another; and unless a change of volume take place, we cannot feel any pressure, either inward or outward. The phenomena of the water-hammer show, that the particles of water are hard, as they strike each other like flint and steel; and it is exceedingly probable that other bodies, solids as well as liquids, are constituted in like manner. A general pressure on the system then, only increases in a small degree the attraction of the ultimate particles, and it is met by a corresponding increase of repulsion from the atmosphere of heat; so that the system remains, as nearly as possible the same, and unaffected by such pressure."

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4. *Quantity of Food taken by a Person in Health compared with the Quantity of the different Secretions during the same period.*—The Fifth Volume of the *Memoirs of the Literary and Philosophical Society of Manchester*, contains an account of a very interesting series of experiments on the quantity of food, taken by a person in health, compared with the quantity of the different secretions during the same period; with chemical remarks on the several articles; by John Dalton, F. R. S. The first series of experiments was made upon himself, in the month of March, for fourteen days successively. The aggregate of the

articles of food consumed in the fourteen days was as follows; of bread, 163 oz. avoir. oat cake, 79 oz.; oat meal, 12 oz.; butcher's meat, 54½ oz.; potatoes, 130 oz.; pastry, 55 oz.; cheese, 32 oz.; total of solid food, 525½ oz. avoir.; averaging 38 oz. daily. Of milk, 435½ oz.; beer, 230 oz.; tea, 76 oz.; total, 741½ oz. avoir. average 53 oz. of fluid daily. Thus it appears that the daily consumption was 91 oz.; or nearly 6 lbs. During the same fourteen days, the total quantity of urine passed was 680 oz. and the fæces, 68 oz.; the daily average is consequently of urine, 48½ oz. of fæces, 5 oz.; making 53½ oz. The quantity of food taken daily having been 91 oz., there remains 37½ oz. to be accounted for, which must have been spent by the insensible perspiration from the skin, and that from the lungs conjointly, on the supposition that the weight of the body remained stationary.

To try the effect of different seasons, Mr. Dalton resumed these investigations in the month of June the same year, and continued them for one week successively. The results were what might have been anticipated; a less consumption of solids, and a greater of fluids; a diminution in the evacuations, and an increase in the insensible perspiration. The following were the results, solids consumed in seven days, 236 oz.; average, 34 oz. per day; fluids, 391 oz.; average, 56 oz. per day. Total per day, 90 oz.; or 4 oz. less per day in solids; 3 oz. more in fluids than in the former trial. The daily averages in the evacuations were, urine, 42 oz.; fæces, 4⅓ oz.; leaving a balance of nearly, 44 oz., for the daily loss by perspiration, being an excess of about 6 oz. above that in the former season, or one-sixth more, owing no doubt to the higher temperature.

Another trial of a week's duration was made in September, with results nearly similar to the last. The daily consumption of food was, 93 oz.; and the perspiration one-half that quantity.

Mr. Dalton next varied the process, with the view to obtain the quantity of perspiration and the circumstances attending it more directly. He procured a weighing beam, by which he could weigh his body, so that the beam would turn with one ounce. Dividing the day into periods of four hours in the forenoon, four or five hours in the afternoon, and nine hours in the night, or from ten o'clock at night to seven in the morning, he endeavoured to find the perspiration corresponding to these periods respectively. He weighed himself directly after breakfast, and again before dinner, observing neither to take or part with any thing during the interim, besides what was lost by insensible perspiration; the difference in the weights, in this case, was the loss by perspiration. The same procedure was adopted in the afternoon and in the night. This train of experiments were continued for three weeks in November. The mean hourly losses, by perspiration were, morning, 1.8 oz. avoir.; afternoon, 1.67 oz.; night, 1.5. During twelve days of this period, Mr. Dalton kept an account of urine, corresponding in time with perspiration. The ratio was as forty-six to thirty-three, which is somewhat a greater disproportion than that observed in March; probably owing to the lower temperature of the weather in November.

These experiments were made forty years ago, but animal and vegetable chemistry being at that time in their infancy, no deductions of any interest could be made. The progress which this branch of physiology has since made, enables us now, however, to approximate very closely, to the quantities of the several chemical elements to be found in the great variety of products of the two kingdoms.

Bread and farinaceous vegetables appear to constitute the greatest part of ordinary food. Mr. D. has found that 5 lbs. of flour make 7 lbs. of bread. Now from the analysis of flour, Mr. D. estimates the carbon in bread at 30 per cent. Twelve ounces of bread, (the daily average in his first set of experiments,) must then contain 3.6 ounces of carbon. Seven ounces of oat-cake and oat-meal he estimates to contain 1.8 ounces of carbon; four ounces of pastry to contain 1 ounce of carbon; nine ounces of potatoes to contain nearly one ounce of carbon; four ounces of butcher's meat, and two ounces of cheese, together about three ounces of carbon;* thirty-one ounces of milk, eleven-twelfths of an ounce. Twenty-two ounces of tea and beer would contain only a small fraction of an ounce of carbon, not easily estimated, and of little account by reason of its smallness. The amount of the element carbon then in some state of combination taken into the stomach, by the different kinds of food, was 11½ ounces.

According to Berzelius, the urine of healthy persons differ materially according to circumstances, but upon an average it may be reckoned to consist of 93 or 94 per cent of water; the rest consists of many substances; the carbon contained in which cannot be estimated at more than 1 or 1¼ per cent. from the analysis hitherto made. This will give .5 or .6 of an ounce of carbon in 48½ ounces of urine per day. According to the same chemist, fæces may be estimated as containing 75 per cent. of water, and the remainder does not seem to contain more than ten parts of carbon. This would give half an ounce of carbon in five ounces of fæces. Hence we may infer that one ounce, a little more or less of carbon, is carried off from the body daily through these two channels. The remainder 10½ ounces must therefore be spent in the insensible perspiration.

The quantity of insensible perspiration from the skin cannot be easily determined by direct experiment; but that from the lungs may be approximated from known facts.

Mr. Dalton has shown† that he produced by breathing in twenty-four hours, 2.8 lbs. troy of carbonic acid gas = .78 lb. troy, of carbon = .642 lb. avoirdupoise, = 10¼ ounces, nearly. He has also determined‡ that the quantity of aqueous vapour which he exhales from his lungs does not exceed 1.55 lbs. troy, = 1.275 lbs. avoirdupoise, = 20½ ounces avoir. If to this we add 10¼ ounces of carbon, we have 30¾ ounces for the carbon and water expended from the lungs in one day, and this taken from 37½ leaves 6¾ ounces per day, for the insensible perspiration from the skin, which if the above estimate be allowed, must consist of 6½ ounces water, and one-quarter of an ounce carbon. According to this, the matter perspired from the lungs is five times as much as that from the whole surface of the body.

If instead of carbon, we trace the element azote into and out of the body, it will appear that from the butcher's meat, cheese and milk, about 1½ ounces of azote was taken into the stomach daily, and nearly as much passed off by urine and fæces.

"Upon the whole we may observe," remarks Mr. Dalton, "that of the 6 lbs. of aliment taken in a day, there appears to be nearly 1 lb. of carbon and azote together; the remaining 5 lbs. are chiefly water, which seems necessary as a vehicle to introduce the other two elements into the circulation, and also to supply the lungs and other membranes with moisture. Very nearly the whole quantity of food enters into the circulation, for the fæces constitute only 1-18th part, of these a part bile, must have been secreted; one great portion is thrown off by means of the kidneys, namely, about half of the whole weight taken, but probably more or less according to climate, season, &c. another great portion is thrown off by means of insensible perspiration; this last may be subdivided into two portions, one of which goes off by the skin, amounting to one-sixth part, and the other five-sixths are discharged from the lungs in carbonic acid, and in water or aqueous vapour."

5. *Six Children at one Birth.*—On the 30th of December, 1831, the wife of a man named Dernian Ploson, living in the village of Dropin, in Bessarabia, was delivered of six daughters, (the fruits of one pregnancy,) all living, and only a little smaller than the usual size of children at birth, with the exception of the last, which was much the least. The mother is not quite twenty years

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* According to Gay-Lussac's experiments.

† Manchester Memoirs, Vol. II. New Series.

‡ Ibid.

of age, and of a strong constitution. The whole six children lived long enough to be baptised, but died in the evening of the day of their birth. The mother suffered from a severe indisposition subsequent to her confinement, but is now quite well.—*Gaz. Médicale.*

6. *On some of the Phenomena Attendant on Suffocation by Carbonic Acid in Man.* By ALFRED S. TAYLOR, Esq., Lecturer on Medical Jurisprudence. Where this gas has been inspired in a state of great purity, death is an almost instantaneous result. It is seldom that any sound is uttered prior to dissolution, or that the being gives any indication of pain or suffering. According to the experiments of Sir Humphrey Davy, the gas does not, under these circumstances, penetrate into the pulmonary organs, the glottis closing spasmodically, and obstructing its entrance; but this experimentalist perceived a strong and pungent sensation in the mouth and fauces, while the gas had a distinctly acid taste. When diluted with air, the symptoms which it produces are those of narcotism, and the patient commonly dies apoplectic.* The incipient symptoms of poisoning by carbonic acid are not very often witnessed; but, from cases which have been published by M. Collard de Martigny and others, in the Archives Générales de Médecine, it would appear that giddiness, vertigo, ringing in the ears, with indistinctness of vision, commonly precede the state of insensibility in which those who have respired it have been found. Convulsions have not unfrequently been observed, and in those cases in which recovery has taken place there has often remained a partial paralysis of the muscles of the face or limbs, with stupor and head-ache.

The post mortem appearances exhibited in the bodies of those who have been poisoned by carbonic acid, are not of a very definite character. The surface has been usually found more or less livid, especially the face, which is described as being composed and tranquil. The animal heat is long retained, and consequently the cadaverous rigidity of the muscular system is a much longer time than usual in developing itself. The right side of the heart, and the great vessels connected with it, have been found gorged with blood. The vessels of the lungs and of the brain have also been found in the same state by various observers; but in the few experiments which I have made on animals, I have rarely witnessed that engorgement of the cerebral vessels which has been described by Portal and Mertzdorff. Where the lungs were excessively distended, the vessels of the brain contained but a small quantity of blood; and this I had occasion to observe more particularly in those cases in which the acid had proved fatal when respired in a diluted state. The appearances, it will be seen, do not differ from those of asphyxia generally; and hence, for the detection of the cause, we must rely upon general or circumstantial evidence.

There has been great variety of sentiment among experimentalists as to the precise manner in which this gas produces a deleterious action on the economy. By some it has been regarded as a directly poisonous agent; while Nysten, who is followed by Orfila, considers that the results of his experiments have established the contrary. This physiologist, who experimented largely on the gases, with a view to arrive at some precise data, in order to determine their mode of action, came to the conclusion that carbonic acid, like nitrogen and hydrogen, destroyed life merely by its negative influence on the system.

In order to determine the relatively poisonous properties of gases, Nysten adopted the plan of injecting them, in certain quantities, into the blood-vessels. In this way he was led to entertain the opinion that, while some exerted a specific influence, giving rise to peculiar symptoms, which were at the same time the rapid forerunners of death, others seemed to act more slowly, and to possess no essentially deleterious properties. Among the latter he placed carbonic acid, and his conclusions with regard to the influence of this gas on the animal economy are, 1st, that it may be injected in comparatively large quantities into the venous system, without interfering with the circulation; 2d, that it exerts no primary action on the brain, but, when injected in a greater quantity than can be held in solution by the circulating fluids, it gives rise to a violent distention of the texture of this organ, and causes death by apoplexy; 3dly, that, when injected under proper precautions, it produces merely a general debility of the muscular system, which passes off after a few days. In the performance of these experiments, unless the gas be thrown in with care, death may result from the mechanical violence produced by the forcible introduction of an elastic fluid into the blood-vessels; but this effect must be contradistinguished from those effects which result from the specific properties of the gas, since in this way the life of an animal may be as surely and as rapidly destroyed through the injection of pure atmospheric air, as through the injection of any other elastic compound, however deleterious.

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* These effects were observed to follow where three parts of the gas were diluted with seven of common air. It has been suggested by Dr. Paris, that a compound of this nature might be advantageously administered in certain diseases where sedatives are indicated; but I am not aware that this suggestion has ever been followed in practice.

The conclusions of Nysten were for a long time regarded as correct, and physiologists readily embraced the opinion he had formed, namely, that carbonic acid was not, *per se*, a poisonous agent. More recent observations have, however, led to more perfect views on the subject; and, although many still adhere to the old opinion, yet the majority of those who have deeply reflected on the subject seem now to agree that carbonic acid has a directly poisonous action on the economy. Nysten himself admitted that, among those gases which he had classed as negatively destructive, there were some which, when introduced into the lungs, appeared to act in a different manner to others. Thus the carbonic oxide was found to destroy life more quickly than nitrogen or the nitrous oxide; while the proto-phosphuretted hydrogen and carbonic acid act with greater rapidity than the carbonic oxide. Now, it is impossible to reconcile these differences with the supposition that the action of the gases above mentioned is merely negative; and hence we must be prepared to admit that they possess certain properties, which more or less distinguish them from each other. If, for instance, it be affirmed that the action of carbonic acid on the system differs not from that of nitrogen, it ought necessarily to follow that these gases may mutually replace each other; but this, by experiment, is not found to be the case. M. Collard de Martigny has ascertained that an atmosphere formed of carbonic acid and oxygen cannot be respired, even for a very short period of time, without producing fatal effects; and from this it is reasonable to conclude that its operation on the economy must be of a positively deleterious nature. This conclusion is still further strengthened by other experiments, undertaken by the same physiologist. Having enclosed animals in an atmosphere of carbonic acid, he allowed them to respire freely the pure atmospheric air; but still he found that the usual symptoms produced by the action of this gas on the economy manifested themselves, although it had not entered into the respiratory organs, and therefore could not have acted in the manner assumed by those who maintain an opposite opinion. If it be a fact that carbonic acid is capable of exerting its peculiar influence through any texture of the body, there can be no longer a doubt as to which side of the question our judgment should incline. The intoxicating power of certain fluids impregnated with this gas, as well as the dizziness, vertigo, and other symptoms of cerebral disturbance, which the long-continued use of them induces, have been long known; but it has been only recently suspected that the carbonic acid, by its action on the mucous membrane of the stomach, may have a considerable share in the production of these symptoms.

Without dwelling upon the importance of these observations, it will be sufficient to conclude this paper by a notice of the very ingenious experiments recently performed by Professor Rolando, of Turin; for this, even if all other proofs were wanting, is sufficient to set the question at rest. This distinguished physiologist, having separated the bronchi in a tortoise, succeeded in making it respire carbonic acid by one lung, and atmospheric air by the other: the animal died in the course of a few hours. To this experiment it may be objected that the respiratory process was impeded throughout one-half of the pulmonary system; and that, therefore, the animal may have perished, not from any positive action of the carbonic acid, but in consequence of the defective manner in which the process of respiration was necessarily conducted. In order to silence at once all objections on this head, the professor next secured by a ligature one of the bronchial tubes, having separated it from its fellow; and he found that the effects produced on the animal by the operation were but slight. The inference which he drew from the results of these interesting experiments was precisely that which was deduced from the preceding observations; namely, that carbonic acid has a directly deleterious influence upon the animal functions, in whatever way it may be introduced into the system.—*Lond. Med. and Phys. Journ. Oct.* 1832.

7. *Endosmose.*—M. Dutrochet has communicated to the Royal Academy of Sciences, a memoir on the power of endosmose considered comparatively in certain organic liquids. The author has employed in his experiments albuminous water and gelatinous water, the density of which was 1.01. The mean of ten experiments have shown that the power of gelatinous water is to that of albuminous water as 1 to 4. If we compare in this respect solutions of sugar, of gum Arabic, of gelatin and of albumen, of the same specific gravity, we find the relative power of endosmose of each to be represented by the following numbers:—

Gelatinous water	3.
Gum water	5.17
Sweetened water	11.
Albuminous water	12.

"My experiments," remarks M. D. "have proved that endosmose is one of the principal vital actions in vegetables; it is very probable that it is the same in animals." He founds this opinion upon the fact, that in these last, that the degree of vitality is greatest in the organs which are essentially albuminous, as the nervous system, and that it is very feeble in the gelatinous organs, as the bones, the cartilages, the tendons, &c. "May it not be," asks the author, "that the considerable difference which exists in the power of endosmose of the gelatin and albumen, is the source of certain physico-vital phenomena, which result from the organic association of these two substances?"—*Archives Générales, Oct.* 1832.

PATHOLOGY.

8. *Cases of Aphonia, depending upon an Affection of the Head.*—Dr. John Webster relates in the *London Medical and Physical Journal,* for October last, the four following interesting cases of this description.

Case I. George Wright, æt. 16, groom. When first seen, this patient had an attack of bronchitis, which was, however, soon removed by the exhibition of demulcent and aperient medicines, and the application of a blister to the chest: on the 14th of January last, he was considered free from all pectoral complaints.

Nevertheless, at this period an affection or weakness of voice showed itself; and, on the 16th, it became so remarkable that Wright could only with the greatest difficulty make himself heard by the bystanders, being scarcely able to speak, even in the lowest whisper. Notwithstanding the presence of this symptom, he did not complain of any pain in the throat or chest, nor was there any dyspnœa; but the patient now for the first time mentioned that he had a severe head-ache, accompanied by drowsiness and deafness; and, on examining the pupils of both eyes, they were observed to be very much dilated, and almost insensible to the influence of light. It was from these circumstances that attention was especially directed to the cerebral symptoms, which ultimately led me to consider this affection of the head to be, in reality, a principal cause in producing loss of voice in this individual; and subsequent investigation, confirmed by the successful treatment adopted, demonstrated the correctness of the pathological views then entertained.

Five grains of the extract of conium were given at night, followed by an aperient in the morning; and a demulcent medicine was also ordered to be taken, twice or three times a day.

Little or no benefit, as might be expected, followed this mode of treatment: on the contrary, the loss of voice still continued, and it was latterly even so much affected that the patient sometimes could not articulate a single word; the air during these efforts to speak appearing to pass through the rima glottis, as if he were blowing a musical instrument, without a note being produced. It also merits observation, that if any alleviation of the pain in the head occurred, and especially if, at the same time, the pupils became less dilated, and were sensible to the impression of light, the voice invariably became stronger and more distinct; thus showing that the condition of the brain, and consequently the function of the nerves distributed on the larynx and glottis, was materially concerned in the disease; and, therefore, it appeared this affection of the head must first be removed, in order to restore the natural tone and strength of the voice.

In accordance with the above reasoning, a blister was applied to each temple on the 24th, which discharged freely; and the patient, when seen on the 26th, was found to have materially improved; the head-ache was almost gone, excepting over the right eye; the pupils appeared less dilated, and sensible to light, and the words, when speaking, could now be more distinctly articulated, although still in a low tone: the countenance likewise looked clearer, was not so anxious, and, to use the patient's expression, "he felt almost quite well," excepting the continued weakness of his voice.

Extract of conium, which had been taken for the last two nights, was continued, and an aperient mixture prescribed in the morning; at the same time, more nourishment was allowed, as the appetite and digestion had improved. On the 18th, the patient felt considerably better; the pupils contracted when exposed to a strong light, and the deafness and head-ache were almost removed; whilst the tone of the voice was nearly natural, and he articulated words correctly, although not strongly. A week afterwards, he had almost recovered his usual voice, had no head affection; and, when seen for the last time, in the middle of February, he was convalescent.

Case II. Mrs. Ellis, æt. 21, married, but without children. On the 15th of December last, Mrs. E. first consulted me as a patient, when she was affected by hysterical dyspeptic complaints, a slight cold, with an occasional cough; which, nevertheless, became one night so severe, that, in the violence of the attack, some slight streaks of blood were observed in the frothy expectoration; the bowels were costive, and the appetite impaired; but at this date there was not any affection of the head, and the voice was perfectly natural.

Camphor mixture, peppermint water, with aperients, were exhibited; and, after a few days, a blister was applied to the lower part of the chest and epigastrium. By these means the patient's health became much improved, her spirits got better, and although there was still an occasional cough, she was altogether relieved, and considered to be nearly convalescent. At this period, extract of hyoscyamus was ordered at night, and decoction of bark added to the antispasmodic mixture.

Early in January last, the voice was observed to be weak, but as she was then thought to be only affected with a common hoarseness, very little attention was consequently at first directed to the circumstance. However, on the 12th of the month, the voice became so feeble that even a single word could with difficulty be articulated; there was no pain of the throat, and she was free from dyspnœa; but she now first complained of being deaf, with a feeling of noise in the ears, and considerable head-ache, occasionally accompanied by giddiness; and on examining the pupils of both eyes, they were found to be very much dilated, and nearly insensible to light; whilst, on inquiry, it was ascertained that at night she could with difficulty see by the light of a candle, being then, in fact, nearly blind.

At this stage of the disease, an aperient medicine was exhibited in the morning; afterwards decoction of bark with sulphuric æther, and extract of conium at night. By continuing these remedies for a few days, Mrs. Ellis improved a little in her general health; her voice appeared somewhat stronger, but it soon again became as weak as before, and could scarcely at last be heard; the pupils were anew dilated, along with dimness of sight, whilst the noise in the ears, and other head symptoms, already mentioned, again returned. In consequence of these circumstances, on the 2d of February a blister was applied to each temple, and a brisk purgative ordered at night, with a demulcent tonic mixture morning and evening.

The blisters discharged freely; after this, extract of conium and squill were given at night, and an aperient draught in the morning, to be repeated when found necessary. About a week after the application of the blisters, all the head symptoms were nearly removed, and the voice had almost recovered its natural tone and strength; the pupils appeared to be scarcely affected, and the patient could now see to read or work by candlelight; in short, she was considered all but convalescent. On the 12th of February Mrs. Ellis was free from any affection of the voice, and she therefore reported herself quite recovered.

The two following cases occurred some months subsequent to the preceding: they are of a similar character, were successfully treated in the same manner, and they fully confirm the views then entertained regarding the nature of this peculiar affection. The symptoms are related with more brevity, as any lengthened account would be superfluous, and is, indeed, not required to elucidate the subject. One remark, however, will not be here out of place: the two first cases occurred in winter, the latter during the warm weather of summer.

Case III. Dinah Swales, æt. 28, single; 7th June, 1832. Is of a full habit of body, and has had occasionally hysterical dyspeptic complaints. For the last ten days, has been affected with pain in the head, vertigo, and dimness of sight, at which period she began to lose her voice. At present, she can scarcely articulate so as to be heard, but has no pain of throat or dyspnœa. The pupils are dilated, almost totally insensible to light, and she cannot always see distinctly; besides noise in the ears, when flushed by exertion, she feels a throbbing at the temples, whilst the voice totally fails, and she is then almost obliged to express herself by signs. Tongue white; bowels open; pulse soft; skin natural; catamenia regular; feels dyspeptic, and complains occasionally of flatulency. For these complaints, in the first instance, she took compound rhubarb pill at night, with an aperient demulcent mixture, also containing camphor, morning and evening. Guided by the experience of former cases, on the 9th four leeches were applied to the forehead, and a blister to each temple at night; which remedies acted properly. Next day, there was evidently less dimness of sight, the left pupil was not much dilated, and the noise in the ears and vertigo were considerably diminished. The tone of the voice sounded decidedly stronger, and the articulation of words was more distinct; the appetite was now good, the bowels open, and there scarcely existed any dyspeptic symptoms.

The voice continued daily to improve, as likewise the sight, unless she was heated by exertion, when these symptoms were always observed to become worse. As the patient, in consequence of exposure to cold on the 14th, had a slight cough and expectoration, compound squill pill, with an aperient demulcent mixture, were prescribed, whereby these symptoms were quickly removed. On the 16th, the tone of the voice was improved, the patient felt nearly free from any complaint in the head, and had no affection of the sight, unless she was hurried or fatigued; under which circumstances the voice became decidedly weaker. For these reasons, a second application of blisters to the temples was advised, and the aperient demulcent medicines were continued. When next seen, on the 21st of June, the blisters, it was reported, had discharged freely, and the patient was now entirely free from any head symptoms, whilst the sight and voice were perfectly natural; she was in fact convalescent; and it has since been ascertained there was no return of the complaint.

Case IV. Mary Joyce, æt. 40, single; 11th June, 1832. Is of a spare habit of body, and generally in the enjoyment of good health. About a fortnight ago, she began to lose her voice, whilst, at the same time, she complained of pain in the head, giddiness, noise in the ears, and dimness of sight, but felt entirely free from any pectoral complaints, and has not been low-spirited or hysterical. At present there is no dyspnœa, pain in the throat, nor any other symptom indicating an affection of the organs of respiration, excepting that the voice is exceedingly weak, sometimes scarcely audible; she complains, however, of pain in the forehead, over the right eye, along with the other symptoms described as having first appeared a fortnight ago, and the pupils are dilated. Tongue is rather foul; but the bowels are open, and catamenia regular.

Thinking it would be adviseable, in this case, first to try the effect of leeches, without blisters, six were accordingly applied to the centre of the forehead, in the same manner as I formerly recommended, with so decided advantage, in hooping-cough; at the same time, an aloetic and rhubarb pill was ordered night and morning. As the leeches did not bite properly, not much blood was extracted: however, the head next day felt less painful, the sight was improved, and the tone and strength of the voice seemed augmented; nevertheless the pills were ordered to be continued, and six more leeches to be applied, as before, to the forehead.

The second application of leeches was followed by considerable loss of blood; and on the 17th of June all complaint in the head had vanished, whilst the voice was strong, and perfectly natural; so much so, that the patient was discharged a few days afterwards convalescent.

Similar instances of extinction of voice are by no means uncommon; indeed, every medical practitioner must have met with them repeatedly in the course of his professional experience: generally, however, such complaints have been treated by remedies more immediately directed to the throat and parts adjacent, since these structures were apparently the seat of disease. Like other physicians, I have also formerly pursued this plan of treatment, when certainly it proved, in the generality of cases, both tedious and unsatisfactory, unless in individuals where there was actual disease in the larynx or neighbouring parts; then the commonly-followed method of cure should be recommended. But, judging from the details now given, and supported by other examples, which it is unnecessary, and would be tedious to relate, we may fairly conclude little difficulty will henceforward be encountered in treating affections of the voice, wherever any cerebral symptoms accompany the complaint, constituting a peculiarity doubtless of much more frequent occurrence than many are perhaps disposed to suspect, in consequence of similar symptoms being either overlooked, or not thought to be of sufficient importance to merit attention.

To illustrate the great influence affections of the brain have upon the voice, reference might be made to what occasionally occurs in public meetings; where individuals, after considerable exertion in speaking, or from mental excitement, will sometimes lose their voice entirely, and even suddenly, so as to be obliged to stop in the middle of a speech. Intoxication, fear, and strong mental impressions, will likewise deprive the person so affected, sometimes, of the power of articulation. And if such transitory cerebral influences can thus act upon the voice, it will surely, without much hesitation, be granted, that severe affections of the brain, or a more permanent disorder in the functions of the nerves distributed on the larynx and glottis, would produce similar, if not greater effects.

Anatomically considered, it will be admitted that any affection of the recurrent and internal laryngeal nerves must materially influence the voice; as these nerves constitute the chief agent, or moving power of that function. And we know, if any tumour press upon the above-named nerves, during their course, from the superior and lateral part of the medulla oblongata, to their distribution on the larynx and parts adjacent; or if these nerves should be cut by accident, or in experiments, the voice then becomes affected, or even destroyed. If such evident causes have so decided an effect upon the voice, other, or more temporary, may likewise produce similar results: at all events, these considerations should not be overlooked, as a paralytic condition, or any disease of these nerves, may as likely exist, as in those of the eye, the taste, or of motion. From these views, the propriety of cupping on the nape of the neck, and the application of blisters there, and to the occiput, in addition to the mode of treatment above detailed, appears evident; and in some cases certainly these means ought to be employed, since undoubtedly they must prove efficient and advantageous.

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9. *Case of Perforation of the Heart.* By JAMES HURD.—*October 9th*, 1831, *at* 8 *A. M.* I was requested to visit Richard Abraham, ætat. 63. On the previous day he had followed his usual occupation of breaking stones on the road, but on his return in the evening he complained of indisposition, and in the course of the night suffered from a fixed pain in the left side of the chest, which extended across the sternum and through the right side, but still he referred to the left side as the seat of this pain.

I found him lying on his back, his head and shoulders being particularly low, the surface of the body was cool, the pulse regular and natural, beating 84 in a minute, the bowels acting properly, no thirst, the tongue rather coated in its middle, respiration perfectly free and natural, no cough, the pain not increased either by attempting to cough, or by inspiring deeply, but slightly if he turned on the left side, no lividity or other change in the appearance of the countenance.

Suspecting that an inflammation of the chest, from previous exposure to cold, was about to declare itself, I ordered the position of the patient to be altered by placing pillows under the shoulders, the surface to be kept moderately warm, and some warm gruel to be administered with two calomel and colocynth pills; promising soon to make a second visit, to determine on the necessity of bleeding and such other measures as after reäction should be established might seem called for.

In about an hour from this time he complained of sickness; he was raised in bed, retched, appeared faint, and died without further struggle or complaint.

On the following morning I examined the body with the kind assistance of Dr. Burrows, and found the pericardium distended with full two pounds of dark blood, which was partly fluid and partly coagulated. The heart was found to be perforated near its apex so as readily to admit the little finger into the left ventricle; the edges of this perforation presented the irregular appearance of a muscular part forcibly torn asunder. The other thoracic, together with the abdominal viscera, were beautifully healthy—not the slightest vestige of present or past disease could be traced. I regret that the blood-vessels were not minutely examined, but in the ascending aorta, not far from the heart, I found two portions of ossification, which did not however involve any thing approaching a circular portion of the vessel. This man had suffered frequently from chronic rheumatism, and had complained of occasional pain in the chest, attended with palpitation.

Excepting the rent in the ventricle, I observed nothing morbid in the appearance of the heart, which is placed in Mr. Richard Smith's Museum at the Bristol Infirmary, but to be quite sure of this, I wrote to Dr. Richard, from whose kind reply I quote the following.

"* * * I perceived, of course, the perforation of the left ventricle. The muscular parietes appear otherwise to be in a sound state. The only morbid phenomenon which is discoverable, is a plate of bone, being an ossified portion of the internal membrane, including one of the aortic valves. The heart certainly appears large, particularly the left ventricle, but I am not sure that the enlargement is to a degree that can clearly be said to constitute disease."—*Lond. Med. Gaz. Dec. 8th,* 1832.

10. *On Emphysema of the Lungs in Persons who have been Strangled.*—Dr. Prus has presented to the Medical Society of Paris a memoir on this subject, which has been published in the *Transactions Medicales* for October, 1832. He has been led by his investigations to believe that among the serious lesions produced by strangulation, emphysema of the lungs, a not unfrequent result of that mode of death, according to him, is one of the most dangerous. The subject is one of interest, and deserving of further investigation.

11. *Cases of Spontaneous Rupture of the Heart.* By Richard Townsend, M. D. Case I. The body of a very old woman was brought into the dead-room of the Whitworth Hospital, for anatomical examination, on the 30th of August, 1830. The external appearance of the body did not in any respect indicate previous disease: on removing the sternum, the pericardium appeared unusually prominent, and of a bluish-white colour. When opened, it was found to contain more than half a pint of dark clotted blood, which completely enveloped the surface of the heart. When this coagulum was removed, the heart appeared of its natural size, but was enormously laden with fat, especially at its basis and over the right ventricle. On the anterior surface of the left ventricle near its septum, and at the distance of about an inch from the apex, a longitudinal fissure, half an inch in length, was discovered, the edges of which were jagged, and had evidently been separated by tearing; there was a slight degree of ecchymosis under the serous membrane, in the immediate neighbourhood of the wound. On laying open the left ventricle, it was found that the fissure seen on the external surface extended through the fat and muscular substance, into the interior of the left ventricle. This cavity was quite empty, all its blood having previously escaped through the wound. The length of the fissure on the internal surface of the ventricle was somewhat greater than on the external surface, but corresponded with it exactly in other respects, being a mere cleft or clink just wide enough to admit the handle of a scalpel. The lining membrane in the neighbourhood of the rupture was soft and friable, and the columnæ carneæ, for about the circumference of a shilling, were of a dull white colour, and so soft as to break down under the scalpel. The left ventricle was of its natural dimensions, and its parietes of their ordinary thickness, but the muscular fibres were pale, soft, and flabby. The other cavities of the heart presented their usual appearance, except that the muscular walls of the right ventricle were as thin as paper, and coated with a layer of fat nearly half an inch deep. The valves were all remarkably healthy for a subject so far advanced in life. The coronary arteries exhibited several patches of atheromatous deposit, sufficient in many points to diminish their caliber considerably. The arch of the aorta was dilated and atheromatous. The other viscera were all healthy, and the muscles of the trunk and other extremities appeared even more firm and florid than is usually observed in persons of her great age.

Upon inquiring into the previous history of this individual, it was ascertained that she was ninety years of age, and had been a servant in the house of industry for many years; her usual occupation was that of scouring the floors; she always enjoyed excellent health, with the exception of an occasional slight cough. In her eighty-eighth year she fractured her thigh near the trochanter, but completely recovered from the effects of that accident in the usual time.

On the morning of her death, she went to the chapel in as good health and spirits as usual, and, while in the act of saying her prayers, she suddenly dropped down dead without a struggle or a moan.

Case II. Another case, of a similar nature to the preceding, occurred in the same establishment on the 5th of March, 1832. The subject of it was a large athletic man, ætat. 84, who had served twenty-six years in the navy, and after a long life of hardships and vicissitudes, was admitted four years ago into the pauper wards of the House of Industry. During the time of his residence in this establishment, his health was uniformly excellent, with the exception of a slight sensation of uneasiness which he occasionally felt in the left side, in the region of the heart. The night before his death, he complained of a return of this pain, and of difficulty of breathing. Next morning these symptoms had totally disappeared, and he got up at his usual early hour, in as good health and spirits as he had enjoyed for many months previously. He went to chapel, walked afterwards in the yard for about two hours, returned to his ward, and while in the act of cutting tobacco at the end of the table, and in conversation with one of his comrades, he suddenly fell down, and expired instantaneously. His family are represented to be remarkably long-lived; there is a sister of his at present in the House of Industry, in her eighty-sixth year.

On opening the body, the only morbid appearances were found in the thorax. The parenchymatous structure of the lungs was rarefied and emphysematous, as is usually the case in persons of his time of life. The pericardium was greatly distended, and occupied the principal space of the lower part of the left side of the thorax. On slitting it open, a large quantity of black blood, partly coagulated and partly fluid, was found occupying its interior. The heart was rather larger than the fist of the patient, but its increase of size was chiefly attributable to a large quantity of fat which was developed on its surface, principally about the origin of the great blood-vessels and along the septum ventriculorum, in both which situations it measured near half an inch in thickness. The muscular substance of the heart was generally pale, exsanguineous and flabby; in the right ventricle the walls were as thin as paper; in the left they retained their usual thickness. The coronary arteries were ossified, and the ossification extended even to the minute ramifications which went to the apex of the heart. On the anterior surface of the left ventricle, about an inch from the septum, and the same distance from the apex, a rupture of the parietes was discovered, half an inch long, and several lines wide: this opening was nearly closed by one of the columnæ carneæ, which was torn across and projected through the external orifice. The muscular fibres in the vicinity of the rupture were in a state of perfect ramollissement, but neither on the external or internal surface was there any unequivocal appearance of ulceration. There were two patches of ecchymosis as large as half-crowns, under the serous membrane on the surface of the left ventricle. No other morbid appearances were observed. Not the least remarkable circumstance in the history of these two cases is the sudden occurrence of the fatal accident in the midst of apparently sound health, not preceded by any premonitory symptoms, or brought on by any moral emotion, or physical exertion. But though there were no evident symptoms of organic disease manifested during life, there was abundant evidence, on dissection, that the structure of the heart was materially altered from its natural condition. The coronary arteries were extensively diseased in both cases, and the supply of arterial blood which they transmitted was, consequently, inadequate for the due nutrition of the muscular fibres of the organ, which were accordingly soft, pale and flabby; and, as usually happens in such cases, an inordinate quantity of fat was deposited on the surface of the heart, as if to compensate for the atrophy of its muscular substance.

In the greater number of cases where rupture of the heart has been observed to occur, it has been immediately preceded by some moral emotion, or physical exertion, or concussion, as its immediate cause, to which the accident is generally attributed. Nicols, who gives a very clear and succinct account of the rupture of the heart which caused the death of George the Second, attributes the accident to the efforts made while straining at stool.—*Phil. Trans.* vol. lii. part I.

A similar accident terminated, not long since, the existence of a late eminent barrister of this city. Bertin mentions a case of rupture of the right auricle, caused by falling out of a window; and Haller and Morgagni have known the heart ruptured during violent paroxysms of pain, and the convulsions of epilepsy. These causes, however, can scarcely be conceived sufficient to produce such a formidable effect, unless where the organ was predisposed to rupture by some preceding lesion; and where such predisposing cause is strongly marked, the ordinary force of the heart's contractions may be sufficient to determine its rupture, as in the present instances.

From the reports which have hitherto been published of this fatal accident, it appears that the true cause of the rupture is most comonly attributable to the parietes having been previously eaten away to a certain depth, by ulceration. The ulcerative process may commence either at the external or internal surface of the heart, or may attack both surfaces at the same time, and continue to burrow until both ulcers meet, and so complete the perforation. This species of rupture may be considered analogous to the perforation of the stomach and intestines, from the successive ulceration of their coats.

Andral mentions, in his Treatise on Pathological Anatomy, that the French pathologists generally enumerate the excessive deposition of fat on the surface of the heart among the causes which predispose to its rupture; but this opinion, he conceives, should receive further confirmation before it is finally adopted, as the only case in point to establish the fact is that related by Dr. Gratiloup, of Bourdeaux, (in the Archives Générales for 1822,) of a curate of that town, who died suddenly in his bed of rupture of the right auricle, the heart being at that time prodigiously laden with fat. The case which I have related would seem to support the doctrine that the excessive deposition of fat on the surface of the heart, especially when accompanied, as it usually is, by atrophy and softening of the muscular fibre, may render it susceptible of being easily torn and ruptured. But even admitting this supposition, it still remains to be explained why it is not in the auricles, or in the right ventricle, where the muscular parietes are thinnest, and the fat most abundant, that the rupture generally occurs; but about the middle of the left ventricle, where the fat seldom accumulates in any great quantity, and the muscular coat is particularly thick and strong. This circumstance would seem to prove that the rupture of the parietes in these cases should not be regarded as a mere mechanical effect produced by their overdistention, but rather as an active process in some degree analogous to the rupture of the uterus, from excessive contraction of its fibres.

Perforation of the heart, from whatever cause it proceeds, is generally followed by immediate death. Bertin states, that of ten cases of this accident, eight died instantaneously, and the other two after a few hours. The extent of hæmorrhage into the pericardium cannot account for these fatal consequences, as the quantity of blood effused is often very trifling. The great and sudden shock which the nervous system sustains is more probably the immediate cause of death. In some rare cases, death does not take place for several days after the accident. It is stated that, in these cases, the perforation has been found plugged up with a coagulum of fibrine. *(Andral.)—Dub. Journ. of Med. and Chem. Sciences.*

12. *Death from Asphyxia, caused by Large Tuberculous Masses Developed in the Parietes of the Left Auricle, compressing the Trunks of the Pulmonary Veins so as to reduce their Diameter to that of a Crow-quill, thereby Preventing the Return of the Blood from the Lungs.* By Richard Townsend, M. D.—John Larkin, a poulterer, æt. 62, states, that he has occasionally suffered from cough and shortness of breathing for several years past, but that he never felt seriously ill until about twelve months since, when, after putting on damp clothes, he was seized with cough, dyspnœa, palpitations and profuse hæmoptysis: for these symptoms he was bled copiously; the hæmoptysis ceased after the second week, and has not since returned; the cough likewise abated considerably, but the palpitations and dyspnœa continued to recur at irregular intervals throughout the

remainder of the winter and spring; during the summer he was so much better as to resume his ordinary occupations, but since the commencement of the present winter, (1829,) his breathing has become habitually short, and at times he has been so oppressed, for hours together, as to make him suppose each succeeding gasp must be his last; states, that these violent paroxysms are brought on by changes of weather, flatulence, or mental vexations; but never had chills, night-sweats, nor diarrhœa.

The following is a summary of the principal symptoms which he presented during his stay in the Whitworth Hospital, to which he was admitted on the 18th of December, 1829. He was excessively emaciated, and was constantly annoyed with a short, dry, harassing cough, his breathing was extremely variable, and, as he himself remarked, materially affected by the state of the weather: during the two or three frosty days that occurred in the first week of January, he was so well as to walk down stairs and take several turns in the garden; but during the damp weather which succeeded, his breathing was frightfully oppressed in paroxysms, resembling the most violent attacks of spasmodic asthma. His pulse was never less than 100 in the minute, weak, compressible and regular. The heart's action, as heard by the stethoscope, was extremely feeble, and could with difficulty be heard fluttering faintly, and apparently at a great distance behind the sternum; in the epigastrium its action was rather more perceptible, but its sound and impulse were so excessively feeble and indistinct that it was impossible to analyze them. The sound on percussion was remarkably dull all over the thorax. During the last fortnight of his existence, no respiration could be heard in any part of the left lung; in the right it was puerile for about two fingers' breadth under the clavicle, lower down it was extremely feeble, and almost completely marked by a subcrepitating râle. At this period he was obliged to sit bolstered up with pillows, and had regularly a frightful paroxysm of suffocation at midnight. His strength now failed him completely; his face assumed a livid cadaverous aspect; his ideas wandered, and became incoherent; and he died asphyxiated about five weeks after his admission into hospital.

Of all the remedies which were employed, blood-letting alone seemed to afford him even temporary relief, but the smallest abstraction of blood was, latterly, followed by such extreme prostration of strength, that its employment was renounced altogether. Antispasmodics and counter-irritants seemed to produce no effect whatever on his symptoms.

On dissection made twelve hours after death, a considerable quantity of serous fluid was found effused on the surface of the brain. On opening the thorax, the lungs appeared to fill the cavity completely, the superficial cells on their anterior surface were considerably dilated, laterally and posteriorly; the lungs at each side were firmly attached to the costal pleura; the medium of attachment was of the colour and consistence of cartilage. On removing the lungs from the chest, they appeared externally of a dark red colour, conveyed a distinct sense of fluctuation to the finger, and felt remarkably heavy. When the left lung was cut into, an immediate gush of blood followed, as if the incision had been made into an aneurismal sac. The quantity of blood which escaped could not be less than three pints and a half; after it had been removed, the pulmonary veins from which it flowed were seen traversing the parenchyma of the lung, dilated to at least four times their natural size; those veins which are naturally no bigger than crow-quills, being as large as the fingers of a glove. On tracing the dilated veins towards the root of the lung, the dilatation was found to extend uniformly from the smallest branches to the main trunks, which formed two large sinuses outside the left auricle. The right lung presented a similar appearance, but in a minor degree. On examining the heart, the dilatation and congestion of the pulmonary veins were found to arise from the compression which they suffered at their entrance into the left auricle, the parietes of which appeared converted into one solid unyielding mass of tuberculous matter, nearly one inch in thickness: this morbid production was developed between the outer and inner membranes of the auricle, and, by the pressure which it made on the pulmonary veins, diminished their caliber so much, that a probe could with difficulty be passed through them into the auricle. The consequence of this constriction of the veins at their orifice was, that the blood, which was thus obstructed in its return to the heart, accumulated in the trunks and minor branches of the veins in such quantities as to produce the enormous dilatation of those vessels which I have endeavoured to describe. The right auricle and ventricle were considerably dilated; the heart in other respects appeared healthy. The bronchial glands were much enlarged, and filled with tuberculous matter. The lungs contained only a few miliary tubercles. The abdominal viscera did not present any unusual appearance.

I have thought this case deserving of being recorded, as it serves to illustrate a morbid condition of the heart and lungs of extremely rare occurrence, and likewise as exemplifying a pathological fact, which I have had repeated opportunities of observing, namely, that a permanent organic lesion may give rise to symptoms of a remittent, or even of an intermittent character. In this instance the mechanical obstruction to the pulmonary circulation, and the consequent congestion of the pulmonary tissue, must have opposed a constant obstacle to the due aëration of the blood, and yet the symptoms of distress were only felt occasionally, or at least were greatly aggravated at intervals. In like manner, I have known aneurism of the abdominal aorta distend the nervous filaments of the solar plexus to such a degree as to lacerate several of them, and yet the pain experienced in this case occasionally intermitted for whole weeks together.

I have searched in vain in modern authors for the description of a state of the heart and lungs, such as I have recorded; but in Sprengel's erudite History of Medicine, I find mention made of a case almost precisely similar, which was reported by Maurocordatus, a Turkish physician, in the year 1664, and is thus described by Sprengel, (Histoire de la Médecine, traduite par A. J. L. Jourdan, tom. iv. p. 129.) "Aux vingt-six raisons qui Maurocordatus allégue en faveur de la circulation pulmonaire, il ajoute encore une observation faite par lui-même sur le cadavre d'un de ses maîtres. Cet homme était mort d'un asthme suffocatoire, on trouva les poumons singulièrement distendus, l'oreillette pulmonaire cartilagineuse, le ventricule gauche vide, mais les veines pulmonaires gorgées de sang; il en conclut que ses dernières raminent le fluide du poumon." From this description it appears, that not only was the organic lesion similar, but that the symptoms which it produced were likewise those of spasmodic asthma.—*Ibid.*

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13. *Effects of Tic Douloureux on the Mammæ and Testes.* By S. Hood, of Brighton.—The first few cases of diseased testicle accompanying neuralgia of the sciatic nerves, I believe to be only an accidental circumstance; an opinion, which, I apprehend, is pretty generally entertained respecting cases of this description. In five out of eight consecutive cases of diseased testicle, with neuralgia of the sciatic nerves, this gland had become small and soft; while in the remaining three it was hard and enlarged. In cases of this kind the patient seldom complains of pain in the testicle, and is, indeed, generally quite unconscious of its being diseased. Recently a gentleman consulted me for tic douloureux of the left cheek and side of the head, which had recurred at intervals for seven years. After having detailed his sufferings, on being asked if there were any disease of the testicles, he congratulated himself, with much apparent satisfaction, on being "all sound there." Finding his assertion doubted, he submitted to an examination, when he discovered, to his mortification, the left testicle quite soft, and only about half its natural bulk. In every other respect this was a robust, healthy man, therefore the softening of the testicle could not be referred to constitutional debility; besides, in the course of a month, great mitigation of pain being procured, the testicle resumed its glandular structure, and very nearly its natural size. When the neuralgic attack is violent, it is probable that the testicle becomes sometimes affected at a very early period of the

disease, for in one of the above-mentioned cases it was found lessened and soft on the tenth day of the disease. It is necessary, however, to add, that in this instance the sciatica was combined with the ilio-scrotal neuralgia of Chaussier; but the sub-carbonate of iron restored the testicle to its natural size and hardness in four days.

I have had no opportunity of ascertaining whether sciatic neuralgia causes any alteration of the mammæ in women; but the following inveterate case of tic douloureux, abridged from the patient's own statement, leads to a suspicion that they sometimes sympathize with neuralgia of the face:—

"I have head-aches of every description—sick, rheumatic, nervous, or what I call eye-aches, which are my eternal torment. Though the pain seems seated in the right eye, yet pressure on it sends a soreness and pain darting into my head, and extending all over this side of my head, face, teeth, gums, tongue, throat, and roof of my mouth, so that life is really a burthen. The veins of my brow swell like cords, and my eyes are red and inflamed, my stomach feels always sick, the retching is very violent, and often, though not always, do I bring off the contents of my stomach. These attacks last from three to six days, and nothing that I know can save me from an attack, or alleviate or shorten its duration. Before, after, and during the attack, the top of my head is as sore as it is possible to be, and there, as also wherever the pain had been, I feel an itching. The nostril is dry and stuffed, and the skin peels regularly off my lips. The symptoms of an approaching attack are generally the itchy soreness on the top of my head, itching and creeping about my face, coldness of my nose, and a teazing tickling in my throat; yet sometimes I have all these symptoms and escape, and at others I am attacked without any notice whatever. The causes of an attack are equally uncertain, that is, to my observation; I generally attribute it to cold, of which I am miserably susceptible; not that I feel cold readily, that I do not, but I think that I catch cold for a very trifle. I cannot go out of doors, I cannot bear a breath of air; it seems to me to be air, not cold, that hurts me. I cannot walk up and down the room, or allow any one to pass and repass me, for the agitation of the air seems to *strike* my eye and temple; and this I feel be the weather warm or cold; more frequently, I think, in the former, for the weather must be cold indeed if I am not in some degree of perspiration. A cold in my head I never have; my feet, legs and knees are the only places where I feel cold, and they are dreadfully so; let me do what I may, they are like ice; fire heat will scorch, but not warm them.

"Till lately I fancied myself free from any fatal disease, but now I fear I have something the matter with my heart; I feel an uneasiness all about it, nor can I lie for any time on the left side; the pulsation is very irregular; at times it beats strong and quick, at other times it seems to stop altogether, which takes away my breath, and is followed by what I can hardly describe, a quick, gurgling noise at my heart, just as if a narrow-necked bottle of water were upset, when I feel suffocating, and have been so bad as to lay hold on the first thing within my reach to support myself; but I am not very well able to describe what I feel about my heart.

"My health and even mind is in a wretched state; at times I feel so miserable, such a load, such an oppression on my mind, and compression in my head, such an inability to move, read, write, think, or, in fact, to do any thing, that I really fear I shall go distracted. My memory is gone; every thing, the most trivial, is a dreadful labour, a task, a something which I am afraid to undertake. The state of my mind is indeed as deplorable as my health, but to express the intensity of pain, which I generally endure, is quite impossible. I do not think I was ever so thin in my life, I am quite wasted away, and if I were to date the time when my health got so very bad, it would be in 1827, but if my memory serves me right, my ailment began as far back as 1817, and I think I caught it in a current of air, while sitting between wet mats of scented grass."

Several important symptoms are omitted in the above statement of this case, but it is sufficient for the object in view to mention only one of them. The left mamma was so nearly obliterated, that it was with difficulty a trace of it could be distinguished. Though this case has not been cured, yet one interval of a month, and another of six weeks, having occurred between the attacks, the left breast not only grew perceptibly, but became rather the largest of the two. This lady's washerwoman was also afflicted with tic douloureux, confined to the second branch of the fifth pair of nerves on the left side; her right breast is wasted, and lactation quite stopped.

In the case of a third female, whose left breast was wasted, and the milk very scanty in it, there was a violent neuralgic affection of the right brow. Another woman, who had no milk in her left breast, had been subject, for several years, to a violent pain on the top of her head; but, in this case, the function and natural size of the breast had not been restored with the removal of the pain. Although it appear a far-fetched conclusion to attribute these alterations of glandular structure and function to neuralgia of a remote nerve, or branch of a nerve; yet it is not very probable, that so many cases of this kind should occur, fortuitously in succession. If these alterations occurred only after long suffering, and when constitutional debility is apparent, they might be referred to this cause; but they happen sometimes before any constitutional effect is produced. Again, the sudden reconstruction of these glands, which often follow the removal or alleviation of neuralgia, would indicate that they are in some way implicated in the previous morbid action. On the other hand, it is certain, that even the cure of neuralgic affections does not invariably restore the natural structure of either the mammæ or testes.—*Lond. Med. and Surg. Journ. Nov.* 17, 1832.

14. *Protracted Case of Habitual Constipation.* By S. Staniland, Esq.—Mary Belmore, aged seventy-three, the wife of a labouring man, requested my advice for "an obstinate costiveness," as she termed it, and gave me the history of her complaint, nearly in the following manner:—

At about twenty-four or twenty-five she could not command a daily motion without the assistance of some purgative medicine, which she generally bought at the druggist's, either jalap, rhubarb, or aloes, but even these in the course of time lost their virtue, "unless she took," as she expresses herself, "as much as would poison a dozen ordinary men:" from two days the interval gradually increased, though unaccompanied with any very unpleasant symptoms, except flatulence and occasional dull, heavy pain on the right side, (I suppose the head of the colon from her description, and pointing to the spot,) and flying pains from the flatulence, until it became a month; and for the last five years, once in two months, not regular to two or three days. Even before my advice was solicited, a medical practitioner here, just antecedent to the last obstruction, had attended her for the complaint, which had not then been relieved for four months and eight days: she told me that he had been successful in purging her, and that she "must have parted with at least a bushel;" but that she would sooner die than undergo again what she suffered from the effect of the medicine, and that unless I could do something for her, which would act speedily and easily, she would not take any thing: this was about a month after the purged motions, and she has had several since, though not at regular intervals. I sent her a box of pills of calomel, ext. colocynth, ol. croton, and cloves; but whether from the trouble of taking them, or their nauseousness, she neglected their use, and as she had comparatively little or no pain from her complaint, week succeeded week, and month to month, until full *seven months* had passed over without the least discharge from the bowels. Some weeks before her death she had a fall, and hurt her right side, (no doubt, particularly the head of the colon,) of which she had complained ever since, the pain gradually getting worse and worse, so that she could not bear the least pressure, and at length was obliged to keep her bed. She died in a few days under the most excruciating pain in the head of the colon from inflammation, which terminated in gangrene of one spot about the size of a crown, from which the fæces had escaped, and were found amongst the intestines on the right side.

The friends gave me liberty to inspect the body after death. Its size was like that of a half hogshead, and as protuberant as that of a dropsical person, as hard as a drum, with the skin as tense as it seemed possible to draw it, and quite polished. I made a longitudinal incision from the ensiform cartilage to the pubes, and a cross one from side to side: the muscles were quite absorbed, and the skin and peritoneum perfectly transparent, and each as thin as a wafer, so that they might almost be torn like paper.

The spectacle which presented itself was very singular, but consistent with what might have been expected: the sigmoid flexure of the colon was so much enlarged with flatus at its upper part as to become quite displaced from the left side; but taking its curve as usual on the left side above, the upper part lay completely across the abdomen, like the transverse arch, but upon that part: when it had got to the right side, it again curved towards the left ileum, or rather to the middle of the pubes, and terminated in the enlarged rectum at the bone of the sacrum. Its upper part, which crossed the abdomen, was so distended with flatus as to be nine inches in diameter; and the lower part, which descended to the rectum, and was filled with pultaceous fæces, was about ten inches and a half, but where it joined the rectum six inches. Nothing could be seen on first opening the abdomen but this portion of the intestine; a small part of the ileum, where it joins the head of the colon; the enlarged head of the colon and the anterior part of the enlarged rectum, the latter seen only because of its enlargement. The rectum was six inches in diameter above, gradually getting smaller towards the anus, which would not more than admit the thumb, though immediately above, it completely filled the cavity of the pelvis. The head of the colon was about nine inches in diameter, and it, as well as the transverse arch, was filled, (I ought to say crammed,) with fæces of moderate consistence, having only a few scybala, not sufficient to have produced irritation as a cause of the prevailing inflammation. The stomach, though an immense cul-de-sac, and appearing as if it had been much distended, was more than half empty, and the duodenum, jejunum and ileum quite so, and their coats perfectly healthy, only thickened in their muscular and mucous structures, as were also the large intestines. The fæces were not inordinately offensive, considering the length of time they had remained in the bowels, nor, excepting the rectum, were they near so concrete as might be expected; but in this gut they were literally as hard as wood, and would require the chisel or hammer to break them in pieces.

Her appetite had always been tolerably good, nor did she refrain from any common diet that presented itself, though generally she lived on fat pork and vegetables.—*Lond. Med. Gaz. Nov.* 24, 1832.

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15. *A New Species of Emphysema developed after abundant Hæmorrhage.* By M. E. Rebolle de Gex.—Case I. *Profuse epistaxis; death; gas in the whole venous system.*—Ducret, æt. 15, was admitted in the Hôtel-Dieu, with continued inflammatory fever, which was relieved by leeches, abstinence and rest; but it was followed by an attack of quotidian fever, which quickly yielded to the exhibition of salicine. The patient was still occasionally subject to epistaxis, with which he had been attacked previous to the occurrence of the fever; and, at the time he was about to quit the hospital, he was found in the night bathed in his blood. The quantity of blood he had lost was very great. The nostrils were immediately plugged, and the patient was thus saved from immediate death.

On the following day, he was in a state of great exhaustion: the eyes were dull, his strength gone, and the pulse at the wrist thready and wavering; it was evident that he could not long survive. In the course of the day, general œdema began to be manifested: he became weaker and weaker, and died on the third day.

Dissection fifteen hours after death.—The body presented no appearance of putrefaction. Almost every part was œdematous; the lungs most so, and next the cellular tissue. In the right auricle and ventricle of the heart, a clot of feeble consistence was found, and of a light colour: this clot was emphysematous; it contained numerous small cells. A smaller clot, of the same kind, was found in the left auricle. The vena cava, subclavian, axillary, and internal jugular veins, as well as the iliac and femoral, contained, in different points of their course, many small bubbles of air, which were separated from each other by small drops of blood, the colour of which was less black than natural. This appearance was more marked in the smaller veins: it resembled a spirit of wine thermometer, into which air has been inserted bubble after bubble. Upon dividing the vessels, gas escaped mixed with blood. No air could be detected in the arteries.

Another case of a similar kind, and experiments upon animals, lead to the same conclusion, that gas is present in the circulating system after profuse hæmorrhages. But what is the nature of this gas? Is it atmospheric air introduced by absorption, or is it the result of spontaneous formation, consecutive to hæmorrhage? This question might have been solved by chemical experiments; but M. Rebolle, probably, could not collect a sufficient quantity of the gas for that purpose. He shows, by the following experiment, that the gas could not be atmospheric air absorbed by the vessels from which the bleeding proceeded. After having exposed the two crural veins of a young dog, he plunged him up to the neck into a bath at twenty degrees; he then divided the crural veins, and the crural artery, without removing the creature from the water. After death, the heart and venous system contained gas, as in other cases. Still this experiment does not show, as M. R. imagines it does, that the presence of the air must be attributed to pulmonary absorption: he should first have proved the existence of atmospheric air, or its element, in the blood-vessels. But whatever may be the cause to which we attribute the presence of air in the blood-vessels, the following case cannot be uninteresting.

Case II. *Schirrous tumour on the back; removal of it followed by considerable hæmorrhage; emphysema; death. The emphysema depending on the presence of inflammable gas.*—Duclos, æt. 25, of a strong constitution, had a very large tumour removed from his back, on the 25th of February: the tumour was very extensive, and the operation lasted forty-five minutes. There was great difficulty in securing the divided vessels, and the hæmorrhage was profuse. For a long time the patient remained in a state of alarming syncope.

26th. Rather better; belly supple, retracted, and not tympanitic. The trunk of the body and the limbs were a little augmented in size, and crepitated upon being pressed; the impression of the finger was immediately effaced. The crepitation was so distinct that, when the nurses were assisting the patient to rise from bed, they thought some of his bones were fractured; and the same noise continued until his death, every time he moved. The dressings were soiled by a reddish-looking serum, which flowed abundantly from the wound.

From this time, the progress of the case was unfavourable: a gangrenous odour issued from the wound, and the man died on the 28th.

Dissection six hours after death.—Thermometer indicating two degrees above zero. Emphysema less evident than during life, and only visible in the scrotum and at the upper part of the thigh on the side operated upon. At these parts the skin was tense, and elevated by numerous small phlyctenæ, close together, and containing reddish serum. The flaps of the wound had not adhered to the parts beneath; they were livid, and partially gangrenous. In every point of the cellular tissue where a bistoury was introduced, gas escaped, and, upon the approach of a candle, there was a slight detonation, and it burnt with a brilliant flame of a bluish-white colour, whiter at its summit and bluer at the base. From the scrotum and the left thigh the jet of gas was stronger, and lasted longer. The gas was completely inodorous. Muscular system healthy, but the colour of the muscles not so red as usual, and their fibres were separated by well-defined intervals. When cut upon, the same kind of sound was produced as upon the division of muscles that have been slightly frozen. When the muscles were pressed before a light, there was a sparkling and cracking like that which is caused by squeezing out the essential oil from orange-peel before a taper. Upon opening the head, the cerebrum powerfully raised the dura mater; and wherever this membrane was divided, a hernia cerebri occurred. The brain was light, and when an incision was made into its substance, a slight noise was heard, similar to that from the section of the muscular tissue; but, upon pressing portions of the cerebral substance before a bougie, neither crackings nor sparks were produced. No gas in the cavities of the heart. In the right auricle and ventricle were two coagula; the largest was in the ventricle, and its size was about that of a filbert. This coagulum was emphysematous; for upon being brought into contact with a light, and pressed, sparks were emitted and a crackling noise. The blood-vessels were empty. The small transparent veins appeared to contain the same gas. The abdomen was slightly tympanitic, and upon being punctured, and a light brought near, a clear and bluish smoke was seen, and the puncture was slightly enlarged by the combustion of its edges, which were also blackened. The small intestines contained a very trifling quantity of pus.

It is to be regretted that an accident happened to a vessel in which some of the gas was set aside, for the purpose of ascertaining its precise nature.

This case certainly merits the attention of physiologists, if it were only on account of the presence of the inflammable gas; and those physicians who have thought that spontaneous combustion depended upon inflammable gas being developed in the cellular tissue will here find some support to their theory.—*Gaz. Méd. Tom. III. No.* 103.

MATERIA MEDICA.

16. *Experiments on Hemlock and Henbane.*—Professor Geiger, of Heidelberg, whilst recently engaged in making chemical experiments, succeeded in establishing some remarkable illustrations of the active principle of hemlock. Its base is an organic salt, which opens an entirely novel series of these highly interesting organic substances, for it is volatile, and similar to a volatile oil. The peculiar qualities of this substance, both intrinsically, and when brought into combination with acids, its rapidly changeable character, and the brilliant play of colours which it exhibits whilst undergoing change, render it one of the most interesting productions in organic chemistry. Its poison is of the deadliest description. The smallest quantity, applied inwardly, produces paralysis; and one or two grains are sufficient to kill the largest animal. Another of Professor Geiger's late discoveries is the active principle of henbane, (*atropin;*) its base is likewise an organic salt, but it is tenacious, admits of being reduced to a crystal, forms a crystalline salt with acids, like hemlock, and has a disagreeable smell, though it is not volatile, unless it be subjected to decomposition. Its poison is quite as deadly as that of the former, but exhibits dissimilar appearances, and is not so rapid in its effects. Animals, where even a minute dose is administered, become languid, cannot stand upon their legs, are attacked by convulsions, and die within six hours. The effect of this poison in dilating the pupil of the eye, is extremely remarkable. The minutest portion of it, when applied to the eye of a cat, produces a dilatation of the pupil for the next four and twenty hours; and the hundredth part of a grain prolongs the appearance for the next seven or eight days, besides inducing other singular symptoms of poisoning.—*Rep. Pat. Invent. March,* 1833.

17. *Constituents of Opium.*—M. Pelletier in an elaborate memoir on opium printed in the *Annales de Chimie,* mentions the following principles as contained

in opium; viz. narcotine, morphia, meconic acid, meconine, narceine, caoutchouc, gum, bassorine, lignin, resin, brown acid and extractive matter, fixed oil, and a volatile but non-oleaginous principle, which rises in distillation with water.

Added to these substances, M. Bebert announces, (*Journal de Pharmacie*, April, 1832,) another peculiar principle; it is bitter, crystallizable, forms salts with acids, especially with acetic acid, with which it gives crystals in the form of very white scales, and with sulphuric acid white silky crystals;—no name is given to this substance by its discoverer.

M. Robiquet, it also appears, has separated a new alkali from opium, which he calls *paverin*. Only a few details of its properties are as yet given, (*Journ. de Pharm.* Nov. 1882. It differs very remarkably from other vegeto-alkalies in being soluble in water. It saturates acids, is insoluble in potash, and contains much azote; it is very poisonous, and acts very particularly on the spinal marrow.—*Ibid.*

18. *Hydrosulphuret of Ammonia.*—It is stated by Mr. Newton in the 2d Vol. of the *Dublin Journal of Medical and Chemical Science*, that he and Dr. Marsh had found the hydrosulphuret of ammonia to possess a powerful effect in lessening the pulse. Dr. Graves has been led from this representation to try the remedy in several cases, some of hypertrophy, with increased action of the heart, in others the heart's action was natural. The remedy was increased to twenty-five or thirty drops four times a day largely diluted. But he says that "in no one instance did it exert the slightest effect upon the heart's action on the pulse."—*Dub. Journ.*

19. *Influence of Vinegar in Lessening the Urinary Secretion.*—Mr. John Dalton in a course of experiments for comparing the quantity of food taken, with that of the different secretions, found on one day a great defalcation in the amount of urine which he passed, and for which he could discover no cause, unless his having taken at dinner time a tea-spoonful or two of vinegar, could account for it. To be satisfied of this, he took some days after, an ounce of vinegar in four equal portions during one day; and the effect was a very great diminution of urine on that day, amounting to fifteen ounces less than the average quantity, (48½ oz.) Mr. D. says that there did not appear to be any increased effect in any other secretion, as a compensation for this diminution.—*Memoirs of the Lit. and Philosophical Society of Manchester, Vol. V. N. S.* 1831.

PRACTICE OF MEDICINE.

20. *Cold Dash in Convulsions of Infants.*—The application of a small stream of ice-cold water to the head, is recommended by Richter in his *Specielle Therapie*, as very successful both in the convulsions and coma of hydrocephalus. This practice is also pursued by Dr. Heim, of Berlin, and repeated so long as the fits of insensibility continues. The neck and shoulders ought to be covered with oiled silk, and the body kept warm. Dr. Graves, of Dublin, recommends a similar practice.—*Dub. Journ.*

21. *Cases of Obstinate Constipation successfully treated.*—By J. Pidduck, M. D. *Case I.*—S. B. a female, age thirty-five, of the highly nervous temperament, who had suffered severely from spinal irritation, stated that her bowels had been confined for five days; that she had taken aloetic pills, senna and salts, and castor oil, without effect; and that she experienced a sense of fulness in the abdomen, with pain and tenderness, increased by pressure at the sigmoid flexure of the colon. Finding that active purgatives of every kind, whether saline or drastic, not only failed to operate, but aggravated the pain and tenderness; that

enemata, even to the amount of two quarts, returned without effect; and that opiates and antispasmodics only occasioned confusion of head, it was determined to desist from purgatives; to counteract inflammatory tendency by small general blood-lettings, and by leeches, poultices, and epithegms of flannel wrung out of hot water, to the abdomen. Drachm doses of castor oil in mucilage, to promote a constant, but gentle peristaltic action of the intestines, were administered, every four hours; a slop diet was enjoined, a tea-cupful only at a time; and perfect rest in bed. On the *sixteenth day*, an evacuation was procured, preceded by the sensation of something having given way in the bowels; after which they resumed their regular action, and the patient recovered without any untoward symptom. She has for nearly five years enjoyed freedom from a similar attack.

Case II.—E. P. a female, aged twenty-three, subject to pain and tenderness along the spinal column, had suffered inconvenience from an irregular state of bowels. Evacuations were rarely procured without aperients, before obstinate constipation took place. She complained of pain and tenderness at the splenic flexure of the colon. The same expectant mode of treatment, guarding against inflammation, was pursued; and *on the tenth day*, a large, hard, dark-coloured stool was passed, after which convalescence proceeded without any untoward symptom; and the bowels, for a year and a half, have acted with greater regularity than formerly.

Case III.—C. L. a female, aged twenty-three, has suffered from spinal irritation, from obscure enlargement of the abdomen, and difficulty of bowels: at length, total obstruction ensued. Purgatives of every kind not only failed to operate, but occasioned pain in the abdomen, chiefly in the region of the sigmoid flexure of the colon. A moderate bleeding was practised, leeches were applied to the seat of irritation in the spine, and leeches and fomentations to the seat of pain in the abdomen. Under a similar plan of treatment to the preceding, at the expiration of *twenty-one days*, a copious evacuation of several pounds weight took place from the bowels.

The *pathological* principle which these cases illustrate is this:—that when spinal irritation exists, (indicated by firm pressure, percussion, or by the application of a sponge squeezed out of boiling water, occasioning pain in some part of the spinal column,) spasmodic contraction of the muscular fibres of the intestines, and consequent constipation may ensue; that the removal of this irritation, by means of leeches and blisters to the spine, is not alone sufficient to produce relaxation of the spasm, but that the dilatation of the contraction requires the slow and graduated pressure of the contents of the bowels, on the same principle as the bougie for the relief of stricture.

The *practical* fact is this:—that constipation of the bowels, unattended by any pathognomonic symptoms, is by no means dangerous; that the danger to be apprehended and guarded against is from inflammation, or from an attack of ileus; that the danger is augmented by the administration of active aperients, as evidenced by the increase of pain and tenderness, requiring vascular depletion, which purgatives occasioned, partly by stimulating the mucous surface of the intestine, and partly by forcing the contents too violently against the stricture.

But, by subduing the inflammatory tendency as it arose; by promoting the regular, but moderate peristaltic action, of the bowel; by a slop diet, and that only in small quantity; by rest, and the uniform temperature of the bed, at length the stricture yielded, admitting of a free passage; whereas, under the heroic plan of treatment, increasing the strength and frequency of the purgative doses for the purpose of overcoming the resistance, *vi et armis*, a fatal termination of these cases might have been the result.—*Lond. Med. Gaz. Dec. 15th*, 1832.

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22. *Treatment of Boils.*—Professor Graves has found a combination of tonics and alkalies the most effectual remedy in cases of repeated crops of boils which occur in broken constitutions, and running through a process of imperfect sup-

puration, producing much irritation, loss of rest, and hectic symptoms.—*Lond. Med. and Surg. Journ. Dec. 15th,* 1832.

23. *Neuralgia.*—MM. TROUSSEAU and RULLIER recommend the cyanuret of potass, (gr. iv. to ℥j. of water,) as a local application in tic douloureux and neuralgia.—*Ibid.*

24. *Paralysis from Painter's Colic, affecting the Upper Extremities.*—In cases of this description, Dr. BRIGHT recommends cupping and blistering the nape of the neck. Dr. Graves has found, in one case, much benefit from this treatment.—*Ibid.*

25. *Enlarged Spleen.*—Dr. PERCIVAL has derived much benefit in enlarged spleen from a combination of gentian and iron.—*Ibid.*

SURGERY.

26. *On the Excision of Hæmorrhoidal Tumours.*—In our last No. p. 513, we gave an extract from a clinical lecture of Baron DUPUYTREN's on this subject. In a subsequent lecture the Baron offered some interesting remarks on the consequences of the excision of hæmorrhoidal tumours. These remarks are so important that notwithstanding their length we give them in full We take them from the report in our cotemporary, the *London Medical and Surgical Journal.*

Dr. Marx has inquired of me, observed M. Dupuytren, if we should not *always, and in every case, cauterize immediately after the operation,* rather than run the chance of internal hæmorrhage, which presents the serious dangers we have already explained. I agree with him, for it results from the recapitulation of a great number of hæmorrhoidal extirpations, which I have performed at the hospital, as well as in the city, that this consecutive internal hæmorrhage came on unexpectedly in two fifths of the cases of operations which have not been cauterized; never on the contrary, has it taken place in cases where the cautery has been used. The question then to be decided is, are not the inconveniences of cauterization preferable to the dangers to which the patient is exposed from hæmorrhage? Now it may be remarked to me, that no comparison can be made between them, that the inflammation and tumefaction which occur after cauterization, the irritation which extends to the rectum and urinary organs, generally yield to the simple treatment which I have before pointed out, and have never been followed by fatal effects; while on the contrary, internal hæmorrhage puts the patient's life into the most imminent danger. Let us suppose a case where some circumstance would not permit assistance to be given in time to the patient attacked by internal hæmorrhage, he will perish, and the operator will feel the greatest regret for not having prevented this accident by using cauterization. Finally, it may be said to me, that since this hæmorrhage occurs in a great majority of cases, and that it is impossible to know *a priori,* if the patient that is to be operated on may be one of the few who escape this accident, why not admit it as a principle that cauterization should always be used. I acknowledge that these considerations appeared to me to be just, and they will lead us without doubt to modify the treatment which we have used to this day in these cases. A treatment as certain in stopping hæmorrhage. is the introduction of a pig's bladder stuffed with charpie into the anus. Though it succeeded in the first operation of this kind that I performed, says M. Dupuytren, I perceived that it was very annoying to the patient, and that it was almost always expelled involuntarily by spontaneous efforts, which were induced by its presence. The other consequences of the excision of hæmorrhoidal tumours are much less dangerous and less unpleasant. There frequently appears a considerable tumefaction of the cellular and adipose tissue of the anus; the principal inconvenience attending this tumefaction is the severe irritation of the rectum, in consequence of which the patient, during four or five days after the operation, feels it quite impossible to go to stool: but the aperient and the enema being again administered, strict regimen being observed, this want will be very much moderated, and will remove a constipation of some days, which would be otherwise annoying. This tumefaction may also cause a retention of urine, but we possess most efficacious means of removing this; as for the tumefaction, it yields quickly to the application of leeches, emollient fomentations, baths, &c. The pain attendant on excision is intense, but almost instantaneous, and this annoyance, which is inseparable from the slightest operation, should not be weighed against the pain and danger caused by the disease. After the operation the patient is liable to different affections, which ought to be the special objects of the surgeon's attention, and which it is in his power to prevent.

It must be acknowledged that persons affected with disorganized hæmorrhoids, are reduced to a state of profound anemia, to asthenia, brought on by the abundance and frequency of hæmorrhages or sero-purulent discharges. These evacuations, to which the patient has for a long period been subject, cannot be suddenly stopped without causing a reäction in the whole system; a general state of *artificial* plethora is induced, sanguine congestions take place in the lungs, liver, and brain, and affections of these organs may follow. The patient is often seized with syncope, spasms, giddiness, and falls into a state of alarming insensibility; the arteries pulsate with such violence that one would think that there was aneurismal diathesis, if these anormal pulsations were not changing every instant their seat and form; and it is a remarkable fact, that this plethora coïncides with a pale complexion, the skin generally yellow, or earthy coloured, especially the face, and with great weakness. Repeated bleeding for some time, and at short intervals, if the patient is young, vigorous and robust; and if the discharge from the anus has been sanguine, the introduction of a seton and of a cautery, if the discharges were of a purulent nature; these two remedies combined, if the case require them, gentle laxatives frequently administered. These are the most approved remedies, and this is the most rational prophylactic treatment we can make use of to prevent a plethora, the existence of which would lead to the most serious danger. When the excision of the external tumour is performed, the cicatrix which remains, either from constriction of the sphincter, or from the tension of the teguments and of the anus, is sufficient in the greater number of cases to oppose efficiently the protrusion of the internal tumour, and we can then dispense with having recourse to the excision of the latter. Beside, the second excision, like that of the external tumour, is generally without injury, and the patient is completely cured of the disease. Excision may sometimes be followed by contraction of the anus. J. L. Petit has reported a case where the contraction was such, that the pipe of a syringe could scarcely be introduced; and this accident can be prevented by introducing into the intestines large wicks, and by renewing them until the cure is perfect. Let us now apply the directions given by M. Dupuytren, his particular practice, and that of his hospital will furnish us with a number of cases. 1st observation.—A shoemaker, about thirty years of age, came some time since for advice for hæmorrhoidal tumours, which weakened him very much; his trade obliged him to sit continually bent; but he attributed his disease to a visit he made in Champagne, where he indulged in numerous excesses in the wine of that province. It was at that time in fact he first perceived that tumours had formed at the verge of the anus. They were at first small, very slightly painful, and only protruded when the patient went to stool; they afterwards increased considerably in size. These tumours, as in many other cases, presented two stages, one which may be called inert, during which time the hæmorrhoids did not discharge, or the discharge was a slight serous oozing, without any inflammatory symptoms; the other stage, designated hæmorrhoidal crisis, is perceived by swelling inflammation, severe darting pains, a considerable discharge of blood, afterward of sanguineous serosity. These crises returned more frequently, their duration increased, the sufferings of the patient became more violent, and his health suffered great injury. When he came to the hospital he was weak, emaciated and yellow; he walked quite bent, and could not straighten himself. This position resulted from a considerable protrusion of the hæmorrhoids, which was at least as large as the fist of a child of seven or eight years old, and was composed of two tumours, one internal, the other external. The patient was besides affected with obstinate constipation, which is often the consequence of an irritation, which extends itself to the rectum, and of a retention of urine, a complication not less common than the preceding. M. Dupuytren recommended the administration of enemas, and the use of baths; by these means the retention of the urine was removed, but the fæcal matter remained. The swelling of the hæmorrhoids was much diminished, there was less redness, the patient suffered much less. There is no doubt that leeches, emollient fomentations, baths, enemas, rest, and proper drink, will not cure the actual crisis, but it is evident that such treatment will palliate it, and that accidents will reproduce this affection at an epoch more or less distant, according to the hygienic state of the patient.

We may be asked perhaps what inconvenience would result from the use of this palliative treatment at each return of the crisis? It is the treatment adopted by many physicians; it is also preferred by many patients who dread the operation. It sometimes happens that this temporary relief retards the return of the crises, and renders them more unusual; but more frequently they reäppear, and the health of the patient visibly alters.

This motive, however allowable it may be, should not be put in comparison to the dreadful effects which the continuance of the disease would bring on; the tumours, external as well as internal, often become scirrhous; sometimes the latter, on its development, recedes up the rectum, to a height which we cannot attain, and the disorganization extends itself in the inside of the intestines. If to these disagreeable consequences you add the general state of the patient, who presents a severe affection of the system, you will think with me, says M. Dupuytren, that it is necessary to practise excision in the actual crisis. But again, do not think that in giving this opinion, I mean that the extirpation of the hæmorrhoids should always be practised; I have pointed out before in what circumstances they should be left to nature, and when they should be removed by cutting instruments. After these preliminary considerations, M. Dupuytren directed that the patient should be brought. He lay on the bed on his knees and elbows, his thighs separated, and with the scissors before mentioned, the professor excised the hæmorrhoidal tumours; after the excision the wound was not cauterized. Cauterization, though certain in its results, has something appalling to the spectators. I have seen you shudder more than once at the sight of the red iron, and at the cloud of smoke which rises from the cauterized part; you may judge what an impression such a preparation would produce on the friends and relations of the patient, who are not, like you, accustomed to such scenes.

Meanwhile, fearing that the hæmorrhage would supervene, we recommended to the surgeon of the ward to watch the patient with the greatest care, and to apply the cautery if the blood began to flow in the rectum. It was also to avoid this disastrous occurrence, that we make it a rule not to apply the dressings for some hours after the operation, because it is to be feared that the dressings would only hinder the blood from flowing out, and thus cause it to flow back into the superior intestines.

What we apprehended, continued M. Dupuytren, happened the next day, an internal hæmorrhage manifested itself; the pupil of the ward was not mistaken, from the symptoms we had so plainly pointed out; he had recourse to the means that have always succeeded with us. He gave him an enema, which brought away a great quantity of blood, a second enema brought a considerable clot; he then made the patient strain, first to expel any blood that might remain, and secondly, to cause relaxation of the sphincter, and exhibit the surface of the divided arteries; then he applied to the bleeding parts two red hot iron instruments. The hæmorrhage did not reäppear, and from this period the patient no longer experienced colic pains, nor syncope.

The quantity of blood lost in this operation has been estimated to be three, four, and five pounds. It flows into the descending colon, also the transverse and ascending, and as far as the cœcum, but never beyond this. The patient, whose case we are describing, presented a complete assemblage of the symptoms of the disease, and the consequences of the operation. From the effects of cauterization he experienced a retention of urine, when it was necessary to use the catheter; after the evacuation of a great quantity of urine, he felt violent pain, which did not cease until the organ returned to its usual state. But the inflammation and swelling caused by cauterization are already diminished, the patient is going on well, and in about fifteen days he will be cured.

Finally, we know that persons affected with hæmorrhoids are subject to obstinate constipation; in this case it lasted for several days; excision as it often happens, had increased it. We have already remarked, that we should not induce stool until the inflammation and swelling have decreased or even disappeared; because before that time, the fæcal matter cannot be expelled without causing violent pain, augmenting the irritation, and tearing the parts. It was not until after this time that enemas and gentle aperients were administered. The sixth day after the operation, all these accidents were dissipated, he went with ease to stool, he had no pain, and wished to be discharged.

Second observation.—About fifteen years ago, a very wealthy banker, about forty-five years of age, of a bilious temperament, consulted the Baron Dupuytren for hæmorrhoids that were constantly in a state of hæmorrhage. These sanguineous discharges had reduced him to a state of great debility and anemia. Pale and debilitated, he visibly emaciated; he was unable to attend in his counting-house; to write a letter was very fatiguing, and almost impossible to him. M. Dupuytren, after examining him, recognised the existence of internal hæmorrhoids, and proposed excision, which was quickly agreed to. Some days after he proceeded in the following manner:—The patient having taken an enema and a hip bath, lay on the edge of the bed, the thighs separated; violent strainings protruded the hæmorrhoids, which were immediatey seized with a forceps with large blades and excised, not without much trouble; no external hæmorrhage manifested itself. M. Dupuytren did not leave the patient; at the end of a quarter of an hour he perceived him become pale, fall into a state of weakness more and more decided, the pulse became small and hard, a cold perspiration covered his body, he felt a sensation of heat in the abdomen, which was continually ascending. From these signs the professor could not doubt that internal hæmorrhage had ensued. He immediately recommended the patient to make expulsatory efforts, and a great quantity of scarcely coagulated blood was discharged; cold injections were useless, the hæmorrhage was not stopped: then a pig's bladder stuffed with *charpie* was introduced; this succeeded completely, but it was not without great difficulty that it could be kept in its place, involuntary expulsatory efforts tended incessantly to displace it, and actually did so several times. This hæmorrhage weakened the patient very much, and would undoubtedly have been fatal if it had not been arrested so promptly; in a short time the cure of the patient was completed.

Third observation.—The banker, whose case we have just considered, had a brother at Berlin, who had almost the same symptoms; this person heard of his brother's cure, and wrote to M. Dupuytren. After the report of a celebrated surgeon of Berlin who attended him, M. Dupuytren was quite convinced of the existence of similar internal hæmorrhoids, and recommended excision. But the accident that happened to the first brother had suggested to him a means of effectually stopping the hæmorrhage, and, consequently, obviating the greatest danger attendant on this operation. He gave written directions, and advised cauterization, with a *cauterie en haricot* if the hæmorrhage manifested itself. The surgeon at Berlin did not follow these directions; immediately after the operation he quitted the patient. Not long after his departure, symptoms of internal hæmorrhage presented themselves; the patient became faint, pale and covered with cold perspiration. One of his younger brothers, who had been present at the first operation, discovered the cause of the malady, and sent after the surgeon immediately, without being able to find him; time was lost, and the danger was imminent; this young brother had the presence of mind to introduce the bladder, as he had seen it done, into the anus, and stuff it with lint and succeeded in stopping the hæmorrhage, but the loss of blood was so great that the patient was a long time before he recovered.

Fourth observation.—A broker, the father of a numerous family, suffered for some years from internal and external hæmorrhoids, by which he was more and more incommoded; he was in such a state as to be unable to walk more than sixty paces without stopping to lean against a stone stud, to gain a momentary relief from his sufferings. Finding that he was obliged to give up his business, and wishing at any price to preserve the power of providing for the wants of his children, he came to M. Dupuytren, who examined him, and perceived a double hæmorrhoidal tumour, being in every way two inches and a half in diameter; blood and pus were discharged frequently, and the scirrhous disorganization appeared very great. M. Dupuytren proposed excision to him. Some fatal cases which recently happened under other surgeons, having made great noise, and this man having heard of them, the proposal made him shudder. M. Dupuytren had great trouble to convince him that cauterization of the vessels was sufficient to obviate all fatal consequences. At length the patient consented to allow the operation; but he wished to go to the Hôtel-Dieu, as he would be better watched, and in order that at the first appearance the hæmorrhage might be combated. The excision was made, some of the vessels were cauterized, and on the twelfth day the patient was perfectly cured.

Fifth observation.—M. Ex—— a Scotchman, a cavalry officer in the service of the King of England, unmarried, about forty years of age, of a sanguine temperament, experienced, for more than three years, great sufferings, caused by internal hæmorrhoidal tumours, which protruded on the least attempt to go to stool. As the fatigues of his profession considerably augmented the annoyance, he came to Paris to consult M. Dupuytren. In compliance with his advice went into a *Maison de Santé*, where he was operated on by this celebrated surgeon, in the following manner:—The patient lay on his side, and made efforts as if at stool; the upper thigh was raised up by an assistant: the operator seized each tumour with a large indented forceps, and with a very sharp bent scissors, excised them successively. There were three tumours, not very voluminous, and as there was but a trifling effusion of blood, M. Dupuytren thought that cauterization might be dispensed with. An assistant was charged to remain with the patient, who was perfectly calm. About five hours after the excision; all the characteristic symptoms of hæmorrhage in the rectum were manifested; anxiety, rigors, inclination to vomit, cold perspiration, sinking of the pulse, convulsive contraction of the limbs, inexplicable agony, vertigo, syncope; tenesmus increasing the patient went to stool, and the expulsion of a considerable quantity of partly coagulated blood gave him visible relief. A cold enema was administered, as M. Dupuytren had directed in such cases; it was returned immediately, and replaced by another that was longer retained. Nevertheless, at the expiration of about an hour, the symptoms returned with increased intensity; they produced complete collapse. The patient requested a notary would be sent for, and hastened to arrange his affairs, preferring death, which he thought was inevitable, rather than submit to cauterization. Dr. Caillard and Dr. Marx took the responsibility on themselves; they endeavoured to tranquillize him; and it may readily be imagined that it was not easy to cauterize under these circumstances. With the aid of a *speculum*, the place from whence the blood flowed was easily found, and the effusion stopped by the application of a bent *cauterie en haricot*, heated to a white heat. The hæmorrhage ceased; the alarming symptoms were dissipated; the inflammation which results from the cauterization, and the dysuria that usually accompanies it, yielded very soon to the use of cataplasms, enemata and baths; a wick was kept in the rectum, and at the end of a few days the patient was perfectly cured.

Sixth observation.—Mr. Joseph Cur— of Polish origin, a singer at Amsterdam, forty-eight years of age, for several years suffered great pain in expelling the fæcal matter. This difficulty was caused by the presence of internal hæmorrhoids, which all together were about the size of a hen's egg. During the act of defecation they protruded, and caused a very painful strangulation, which was very difficult to reduce.

These tumours were not accompanied by habitual nor periodical discharges, only when the patient had a constipation; the hardened excrements, occasioned by their pressure, an erosion that gave rise to a slight discharge of blood. Forced by his profession to long standing, and to exertions of the voice that augmented his disease, and his sufferings, he resolved to travel to Paris, in hopes of being cured. M. Dupuytren made him go into a *Maison de Santé*, where, two days after, he was operated on. The patient lay in a convenient posture; the tumours, three in number, being protruded, were immediately excised. What is remarkable in this case, is, that notwithstanding the large volume of the tumours, the excision caused but a slight effusion of blood, and did not require the cautery. A year after his cure we had occasion to see this patient, when there was no failure in the success obtained with an astonishing promptitude. These observations we owe to the complaisance of Dr. Marx; we will, in conclusion, add one communicated by our benevolent colleague, Dr. Paillard.

Seventh observation.—A man, about forty-seven years of age, of low stature and sanguine temperament, came to the Hôtel-Dieu, to be treated for internal and external hæmorrhoids, with which he had been afflicted for fifteen years. These tumours were so painful that he could take very little exercise, or run for any distance, without causing protrusion of the internal hæmorrhoids, which became irritated immediately by the friction of the dress. Repeated inflammation caused a discharged, sometimes sanguine, sometimes purulent, sometimes both one and the other. The act of defecation was a continual torture to the unhappy patient. Should the fear of those accidents that may result from the excision induce us to leave the patient a prey to this disastrous infirmity? The frequent returns of inflammation of the hæmorrhoidal tubercles will bring on disorganization. Besides, it is almost certain that the sanguine and purulent discharges would undermine the patient's constitution, and the sufferings he would undergo would hasten this fatal termination. We did not hesitate; the operation was decided on, for the danger was not inevitable, whilst disorganization would produce certain death. The patient was prepared for the operation by every means likely to insure success. General bleeding was practised, in order to prevent the violence of the inflammation which usually follows the excision of hæmorrhoids. A blister was applied to the arm, to prevent the danger which sometimes follows the too sudden suppression of a natural discharge. The patient was kept on low diet, and the day before the operation the intestinal canal was emptied by an aperient. A tumour, composed of seven or eight tubercles, brownish on the outside, but of a brighter colour inside, encircled externally the verge of the rectum. When the patient was lying down, without making any effort, all the tubercles were grouped, so as to form a brownish rugged tumour, about the size of a large walnut. When, on the contrary, the patient contracted the abdominal muscles, or strained as if at stool, the external tumour opened and exposed a second circular hæmorrhoid, also composed of seven or eight tubercles, but of a different colour, for they were uniformly of a roseate colour, and covered in all their extent by the internal membrane of the rectum. After having pointed out these different circumstances, M. Dupuytren ordered the patient to lie down on his abdomen, and to make efforts as if at stool. This caused the protrusion of the internal hæmorrhoids, which were seized with a dissecting forceps, and each of the tubercles that composed it were excised. The same was done with the external tumour, and immediately after a cautery, heated to a white heat, was applied to the bleeding parts of the wound; some hours after a small wick was introduced into the anus, and afterwards a cerate. He could retain them but a very short time. During the day he complained of transient colic pains, (diet, diluting drink, &c.) The next day the colic pains were more violent and more prolonged, the verge of the anus was tumefied and painful, the patient felt difficulty in voiding urine, feverish symptoms, (bled in the arm, diluting drink, &c.) The third, fourth, fifth and sixth days after the operation, the pains decreased, the urine was freely evacuated, and the feverish symptoms disappeared; the appetite returned, and he was allowed some aliments. The seventh day, as the patient had not been at stool from the day of the operation, an ounce of castor oil was administered to him, and some hours after the bowels were opened five or six stools occurred during the day, they were all accompanied by great pain at the anus, nevertheless, after each of them, the patient felt considerable relief. The following day he went freely and naturally to stool, the colic pains became less and less frequent, but the twelfth day they returned with violence, and were followed by diarrhœa, the cause of which was unknown, (mucilaginous drinks, &c.) The next day he was in the same state, (treacle one ounce.) The fourteenth day the diarrhœa ceased, and with it the colic pains, (rice gruel.) On the fifteenth day the patient was quite well. He was allowed a moderate portion of food, he was radically cured of the hæmorrhoids, and the anus remained free in whatever posture he placed himself; defecation caused no pain, and he quitted the hospital completely cured.

27. *Prognosis and Treatment of Luxations of the Cervical Vertebræ.*—Dr. Seifert relates in the *Journal Complémentaire des Sciences Medicales*, two cases of unilateral luxation of the cervical vertebræ, in which reduction was successfully and readily effected. The three principal symptoms of this luxation are stated by Dr. S. to be the impossibility of the patient's turning over his head to the side opposite to that of the luxation, the inclination of the head to the side where the luxation has occurred, and the position of the spinous apophyses of the luxated vertebra beyond the normal line of the spinous apophyses. That this luxation by itself is not dangerous, is proved by anatomy and experience. The efforts of the surgeon for its reduction are not to be so much feared as has been believed. The elongation of the spinal column by extension and counter-extension, cannot injure to any extent the spinal marrow, this elongation being participated in by all the articulations, and consequently it is very little for each one of them. In practice the increase of the inclination of the head in the direction of the luxation may be avoided.

28. *Case of Luxation of the Lower End of the Ulna, with Remarks.*—An officer, aged thirty-two, of athletic form, was thrown from his horse, and his right arm got entangled and confined between the horse's head and the ground in such a manner as to receive a violent shock. He experienced acute pain, and imagined that his arm was broken. It proved, however, to be a dislocation at the wrist, and attempts were made by two surgeons to effect reduction, but without success; and he repaired to Paris to consult M. Dupuytren. When seen by this distinguished surgeon, which was thirty-four hours after the injury, the symptoms were as follows:—The forearm was swollen; the hand in a position intermediate between pronation and supination; the inferior part of the forearm was rounded, and consequently lessened in its larger diameter; an unusual projection raised the skin at the middle and anterior part of the wrist; on the inner side the internal maleolus could not be felt; behind, a hollow occupied the situation of bulging usually produced by the head of the cubitus; if this bone was traced with the fingers from the elbow to the hand, it would be perceived that it was directed obliquely forwards and outwards, crossing and passing above the lower part of the radius. The dislocation of the ulna forwards was therefore evident.

The radius had remained in its place, and the hand followed this bone as in the natural state. The wrist neither projected forwards nor backwards. In making some movements, M. Dupuytren believed that he perceived an unnatural degree of mobility at the lower end of the radius, but without being absolutely certain of its existence; no crepitation could be detected; pronation and supination were completely destroyed; and, finally, two bruises were seen, one corresponding to the lower third and inner side of the ulna, the other on the outer surface, and at the union of the radius with the hand.

These points having been distinctly ascertained, M. Dupuytren proceeded to the reduction. The patient was seated at an angle of the wall, where there is fixed a ring, used for such operations; a sheet, which was passed under the right axilla, and through the ring, afforded a fixed point of counter-extension; another sheet was applied at the bend of the elbow, and given to the assistants in such manner that the forearm remained bent at a right angle on the arm; a napkin was attached to the wrist, and three assistants made extension. The reduction, however, was not thus accomplished. Perceiving the inutility of this mode of extension, it struck M. Dupuytren to extend the limb himself by the hand, inclining it strongly towards the radial side, whilst with his two thumbs united, he endeavoured to force the ulna inwards and backwards. By this means the reduction was accomplished. A slight noise was heard as the bone slid into its place, and the patient exclaimed, "I am cured." All the deformity had disappeared; the movements of pronation and supination were performed with freedom; the apparatus for fracture of the forearm was applied to guard against injury, and the patient sent to bed. He slept well the following night, and next morning the swelling had begun to decline. The bandages were re-adjusted; and in the course of the day the patient returned home.

M. Dupuytren says that he has met with but one analogous case. "A builder, raising his hand to protect himself from a portion of wall which was falling upon him, had the wrist-joint dislocated, and came to the Hôtel-Dieu with all the symptoms of a luxation of the ulna forwards—such as we have seen in this patient. The reduction was accomplished in the same manner, and proved equally successful. Thus, reckoning that which is before you, here are the only two cases of the kind which I can call to mind as having occurred during the twenty-four years that I have been surgeon to this hospital. It is of importance that they should not be lost, for in surgery it is, especially with respect to dislocations, that precise details are wanting. If every author, in treating of this subject, had thought fit to speak of what he had seen, instead of copying the descriptions of others, we should ere now have had a multitude of accurate cases, which have been lost from negligence, while we should have been spared many of our present inexact and erroneous notions.

"The skin, you perceived, was not torn. In the luxation of the ulna forwards, this, indeed, must be very rare, for it would require enormous violence to effect it; it would, in fact, be necessary that the radius should have been fractured severely, if indeed it were not comminuted, and the strength of the ligaments and the thickness of the fleshy parts, and even of the integuments in front, would present an impediment to external projection of the bone, which it would be very difficult to overcome. It is different with the luxations backwards—there the ligaments are not so strong; the bones are almost immediately covered by the integument, while the sharp projection of the styloid process forms a ready means of tearing through the parts. Have you not observed, after certain wounds from fire-arms implicating this joint, or its immediate neighbourhood, how, when chronic inflammation supervenes, the thin delicate skin about the outer and back part of the wrist becomes ulcerated? I have seen it perhaps twenty times; and it depends upon the projection of the styloid apophysis.

"I have referred to the observations of Sir A. Cooper, and to those of M. Breschet; and I have looked into all the cases I have, and can only find two which are analogous. Now then comes this question: suppose there were dislocation with rupture of the integuments and protrusion of the bone—what should be done? Ought we to attempt reduction, or to cut off the projecting part, or to amputate? I would prefer immediate and exact reduction—making free incisions; for the chief danger lies on the side of inflammation and strangulation of the parts beneath the aponeuroses. I would not cut off the projecting bone unless the necessity for doing so were conspicuous; still less would I have recourse to amputation.—*Lond. Med. Gaz. Dec.* 15*th*, 1832.

29. *Case of Subclavian Aneurism.*—The *Lancet*, for November last, contains an account of a case of subclavian aneurism successfully treated by WILLIAM P. NICHOLS, Esq. of Norwich. The subject of the case was a lady, twenty-one years of age, in whose neck a pulsating tumour appeared immediately after she had subjected her left arm to severe and unusual exertion in saving herself from a fall.

"On examination," says Mr. N. "I found a tumour of the size of a hen's egg, situated in the left side, occupying the triangular space which is bounded below by the clavicle, on the inner side by the clavicular portion of the mastoid muscle, and on the outer side by the anterior fibres of the trapezius, evidently the result of some injury done to the subclavian artery in that part of the canal which stretches from the edge of the scalenus muscle towards the axilla, before it has passed under the clavicle; indeed, so near the edge of the scalenus was the injury, that I was not able to compress the vessel with my thumb, between the muscle and the tumour.

"The aneurismal nature of the swelling being very evident, I did not think it desirable at that time to apprise the patient of the formidable character of the tumour; but, directing her to remain quiet, I gave her some aperient medicine, promising to see her again in a few days, when I explained to her fully her situation, and the mode of treatment which I proposed to adopt; she assented, and the operation of securing the vessel above the aneurism was performed in the following manner:—

"*April 30th, eleven A. M.*—The patient was placed in an horizontal position on a table about three feet in height, having her head hanging over the end, and supported by an assistant. The integuments being drawn down, an incision was then made through the skin and platysma myoides, along the clavicle, three inches in length, from the outer fibres of the clavicular portion of the sterno-cleido-mastoideus, outwards: another incision was carried from the inner point of the former one, upwards along the clavicular portion of the sterno-cleido-mastoideus for four inches; this incision passed between the fasciculi of the platysma myoides, which, in this case, were remarkably large. The triangular flap formed by the two incisions, was dissected back, carrying with it, imbedded in its substance, the external jugular vein, as far as the tumour would allow of its being done; and a little dissection now brought into view the omo-hyoideus at the upper part, passing obliquely upwards to its insertion. This muscle was divided, and a small artery passing across the wound immediately below it, was secured; the deep fascia of the neck was here exposed, having on the inner side the middle scalenus beautifully distinct, and passing to its insertion into the tubercle of the rib. By slightly rotating the head, the different direction of its fibres from those of the sterno-cleido-mastoideus, became remarkably apparent, showing how important at this stage of the operation it is, that this muscle should be your guide. The fascia was then cautiously divided along the outer edge of the scalenus, and the transverse artery of the neck drawn upwards by a blunt hook, whilst the large vein which accompanies it, but which crosses the wound considerably lower down, was secured by two silk ligatures and divided. This enabled me to pass my finger along the scalenus to the tubercle of the rib, and to compress the artery where it leaves the chest, about half an inch above that process. The space, however, between the aneurismal tumour and the scalenus was so small, that it was thought adviseable to divide a few of its fibres, in order the more readily and securely to tie the vessel. This having been done, a strong blunt aneurismal needle armed with a silk ligature was very readily passed under the artery from below, and its blunt extremity having been pressed upwards, I cut through the cellular tissue upon it, and thus passed the instrument without detaching the vessel from its connexions. The ligature was tied with great ease, and the tumour immediately subsided. All pulsation ceased from that time; the edges of the wound were brought together by means of a suture and some adhesive plaster, and the patient returned to her bed. She bore the operation with remarkable firmness throughout."

Nothing requiring notice subsequently occurred. The ligature on the artery came away on the 20th of May, and up to the date of the report, (November,) the patient had enjoyed perfectly good health, and felt no inconvenience from the operation.

The following circumstances Mr. N. considers of some importance:—

"*The position of the patient*, who was placed horizontally, with the head, (as described,) hanging over the end of the table, which position contributed very materially to facilitate the different steps of the operation. The space is thus completely exposed; the light falls fully on the part where it is of the most importance; and the operator is not confused by the presence of any accumulation of blood at the bottom of the wound.

"*The turning back of the jugular vein imbedded in the flap*, thus placing it beyond the chance of injury at the time of, or subsequently to, the operation.

"The practicability of performing this operation *without detaching the sterno-cleido-mastoid muscle from its clavicular origin*, although the tumour was situated above the clavicle.

"*The drawing upwards of the transverse artery*, and thus leaving it undivided, by which this vessel, (becoming enlarged as the circulation in the extremity grows more free,) becomes one of the principal trunks in subsequently supplying blood to the limb.

"*That no unfavourable symptoms* were produced by the division of, and tying, the accompanying vein, which in this instance could not be avoided.

"Lastly, the passing the aneurismal needle under the vessel, *without separating it from its connexions, which may be readily effected; and of tying it beneath the outer fibres of the scalenus*, which fact appears to me valuable, inasmuch as it proves, that the very short distance between the ligature and the thyroid axis, affords sufficient space for the formation of a coagulum, and the consequent obliteration of the arterial tube."

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30. *Clinical Lecture of M. Dupuytren on Retraction of the Fingers.*—M. Dupuytren, several months ago, directed the attention of his pupils to the subject of permanent flexion of the fingers, and the different causes of the deformity. Writers, in general, have only treated of that species of flexion of the fingers which is occasioned by hardened cicatrices from burns on the palm of the hand. M. Boyer, in his work on Surgery, briefly refers to the subject, and attributes the retraction of the fingers to a *crispatura tendinum.* The real causes and proper treatment of such cases were unknown, until M. Dupuytren discovered that the presumed contraction of the tendons was nothing more than contraction of the palmar aponeurosis, the division of which would immediately remove the deformity. At this time there was every reason to believe that this affection of the aponeurosis was accidental; the causes of it appeared evident, inasmuch as it existed usually in persons who were obliged to make frequent and violent efforts with the palm of the hand. Additional facts, however, have shown that this contraction of the aponeurosis may be not only congenital, but also hereditary. In July, M. Dupuytren was consulted in the case of a child, six years of age, who had a permanent retraction of the little and ring fingers. There were no traces of cicatrix or burn; but, when the fingers were forcibly bent backwards, the extended aponeurosis raised the skin like a tight cord, and left no doubt as to the diagnosis. In this instance the deformity was congenital;

the grandmother of the child had also been born with the same deformity. But, independent of retraction of the aponeurosis, and cicatrices upon the palm of the hand, other causes may also give rise to rigid contraction of the fingers, and different modes of treatment may be required. M. Dupuytren, for example, enumerates white swelling upon the joints of the fingers, and their consequent anchylosis; deformity of the articular surfaces from the effect of certain trades; the existence of serous cysts in or near the articulations; wounds of the flexor tendons; and paralysis of the extensor muscles. A case recently occurred at the Hôtel-Dieu from a different cause. The following is a brief account of it.

Retraction of the Middle Finger, in consequence of Adhesions of the Extensor Tendon. Division of the Tendon; Cure.—Virginie Lecord, three years old, had, at the age of a year, several small abscesses upon the lower third of the back part of the forearm. The two cicatrices that remained appeared too large for simple boils; but whatever might have been the nature of the abscesses, there was a cicatrix on the lower part of the forearm, outside the extensor tendon of the fingers, and a second inside the tendon, about half an inch lower down. The tendon formed a projection under the skin like a hard and rigid cord; the hand was bent backwards so as to form an obtuse angle with the back part of the forearm. The fingers were habitually in a flexed position; and it was only for a short time that the child had gained the power of voluntarily extending them. The state of the middle finger was different from that of the others; the first phalanx of it being bent much more backwards than the others; whilst the two other phalanges were rigidly flexed. In producing extension by force, the third phalanx was extended upon the second, but the latter remained obstinately bent upon the first.

M. Dupuytren regarded this as a very remarkable fact: the cause of the flexion existed neither near the joints nor the palm of the hand, but upon the back part of the forearm. There was no difficulty in explaining this apparent anomaly. In consequence of inflammation of the neighbouring parts, there were morbid adhesions and retraction of the extensor tendon, which satisfactorily explains the immoderate extension of the hand and first phalanx. But this forcible extension, this bending of the hand backwards, produced an unusual elongation of the flexor tendons and muscles, which were constantly endeavouring to regain their natural length; hence the habitual flexion of the fingers; but the extension being more powerfully exerted upon the middle finger, and pulling backwards the first phalanx, the action of the flexors, which could only act upon the two other phalanges, bent them inwards with still greater force. Every one may ascertain the validity of this explanation upon his own person. When all the muscles are in a state of repose, the fingers are more or less flexed, and they cannot be extended without bringing the flexor muscles into a greater or less degree of tension. If extension is forcibly produced, the tension of the flexors is augmented, and there is a degree of extension at which the hand cannot be forced further backwards upon the wrist, without flexion of the phalanges occurring in spite of any voluntary efforts to prevent it.

In the above case, the treatment, said M. Dupuytren, was obvious. It was necessary to divide the bridles which held the extensor tendon, and prevented it from yielding to the power of the flexor muscles, and perhaps also to divide the tendon itself. This division was made in the simplest manner; the tendon was exposed and cut across, and a part of the bridle, which was formed of a fibrous elastic tissue, was removed. The hand was immediately restored to a state of moderate extension; the middle finger was bent back, and the parts were maintained in position by an appropriate apparatus.

In fifteen days the little patient was discharged from the hospital entirely cured of the deformity. M. Dupuytren suggested that other causes would be discovered of this affection. It is very possible that the flexor muscles might be attacked with spasm, analogous to that which sometimes affects the sterno-mastoidean, and which necessarily draws down the head, and forcibly raises one shoulder. Some authors have pointed out a flexion of the finger as a symptom of luxation of the wrist, but M. Dupuytren doubts the existence of this injury.—*Gaz. Med. Tom. III. No.* 101.

31. *Injury of Hip-joint, and Secondary Luxation into the Ischiatic Notch.*—The following rare and interesting case is related by Mr. Ward. A tall but not very muscular shoemaker, aged forty, was admitted into St. Thomas's Hospital September 27th, having received an injury on the hip-joint from a fall. On admission he stated, that while walking on the pavement a month before, he slipped from the curb-stone, and fell with the whole weight of his body on the left hip, which part, he thinks, struck against the edge of the stone. On attempting to rise he again fell, and struck his knee. He was taken to Guy's Hospital and examined, but neither fracture nor dislocation being made out, he was dismissed. On the following morning he was brought to St. Thomas's Hospital. No fracture nor dislocation could be detected; he complained of a good deal of pain in and about the hip-joint, for which he was cupped freely and dismissed. After this he obtained admission into St. George's Workhouse as a pauper, where he was again carefully examined by the parish surgeon, but with the same result. He remained here a month, suffering very severe pain at times; kept his bed, and had the parts fomented frequently. He also states, that the day after the accident he could perceive that the left leg was a little shorter than the right; he could, however, bring the foot to rest on the ground when in the erect posture, by holding any thing to support him, though he could not bear the weight of his body on that leg, nor advance it before the other. He continued to suffer pain in the hip all the time he was in the workhouse.

He was seen on the day of admission by Mr. Travers, who examined him standing and lying down. Both legs were of exactly the same length, the left knee a little more advanced than the right; no alteration could be observed in the appearance of the hip-joint, and the contour of the buttocks was uniform. He could not raise the left thigh from the bed without the assistance of his hands; when standing erect he brought the foot and heel to the ground, but could not bear any weight on it, nor advance it before the other; he had a constant pain in the hip, extending down the thigh to the knee.

Directed to remain quiet in bed, and apply a large blister over the hip-joint.

The following week he still complained of pain; the blister was therefore repeated, and with considerable relief.

A third blister was applied to the outer side of the thigh. On Thursday, November 15th, the man's lameness continuing, Mr. Travers again examined the limb, and was much surprised by the following appearances. The injured thigh was found more than an inch shorter than the other; the knee raised and inverted; the foot also turned in; the great trochanter forming a remarkable prominence on the outer and back part of the gluteal region. Rotation outwards caused considerable pain, and the head of the bone could be distinctly felt to strike against the part on which it rested. The thigh could be carried backwards and outwards to some extent, but not inwards or forwards.

The nature of the injury, as it now existed, was very evident; and although a period exceeding three months from the time of the accident had elapsed, Mr. T. determined to attempt the reduction. He was therefore taken into the operating theatre, and placed on a table on his right side, a padded girth passed so as to fix the pelvis, which was then made secure by a cord to a fixed point; a linen roller applied round the thigh, and the padded strap buckled round above the knee, to which the pullies were attached. Extension was then made across the lower part of the right thigh for twenty minutes, without any change being produced. A vein in the arm was opened, and thirty ounces of blood taken. The extension was kept up, and doses of tartarized antimony administered for a considerable time; but neither sickness nor syncope induced. During the extension the leg was rotated, and an assistant endeavoured to raise the bone by means of a round towel passed over his shoulders and under the upper part of the patient's thigh. This process was continued for near an hour. By passing the fingers from the trochanter along the neck of the bone, the round head could be partially felt, deeply and firmly fixed in its position.

All means having failed to replace the bone, he was removed to bed, for nature to complete that which no doubt she had already commenced—namely, the formation of a new acetabulum.

Mr. Travers in his remarks on this case, says that he can explain it only by supposing one of two primary accidents. 1. The laceration of the teres and capsular ligaments. 2. The comminuted fracture of the acetabulum on its ileo-ischiatic side.

I know that a dislocation may, from hurry or insufficient care, be overlooked or mistaken; but this was not that case, as will be concluded from the facts stated in the narrative. Secondary luxations arise from such casualties as those above-mentioned, and also from destruction of the parts forming the articulation, by the inflammatory, *i. e.* ulcerative process. The last is so marked and so slow a process as to be inadmissible in the present case as a mode of explanation. Its frequency makes surgeons sufficiently familiar with it. Unreduced luxations are generally viewed as opprobrious to the surgeons who have been called to them; but a case like the preceding would be very uncharitably, or rather unjustly, made the subject of a reproachful comment. It is on this account that its publication is important, and that I avail myself of the opportunity of adding a remark or two.

At the end of a month from the accident, I undertake to say positively that no recognizable luxation existed; yet there was lameness and pain in the joint and its extended motions, which led me to suppose it the seat of ligamentous inflammation from the concussion, and to blister it freely. The signs of synovial inflammation, or "morbus coxæ" in its first stage, were not present, and the health was not disturbed. It is now a dislocation so palpable as not to admit of a doubt; and the question is, how and when the bone became luxated in the interval between the end of September and the 15th of November. If the preliminaries to dislocation, (as the tearing through of ligaments, or a breach of the wall of the acetabulum,) had taken place at the moment of the injury, the head of the femur might afterwards be so easily displaced as that its actual escape might be unperceived.

The ulceration of the lacerated capsule, the separation, or perhaps extraneous attachment, of an insulated fragment of the wall of the acetabulum, might either of them be accomplished in this interval without any general or diffused inflammation of the joint.

Subluxations take place, in the shoulder and hip-joints, from injury as well as from disease. Their signs are necessarily, like the displacement, partial and imperfect. As the process of absorption advances, the head of the bone gradually passes on, and then over the border of the receiving cavity, and imperceptibly the semiluxation becomes total. In the ginglymoid joints—*e. g.* knee and elbow—though the semiluxation is yet more frequent, the injury seldom proceeds the length of complete displacement, owing to the different disposition of the articular surfaces as compared with the ball and socket-joints.

Two circumstances noticed in this case serve to confirm the belief that the injury of the ligamentous or bony structure predisposed to the luxation. 1st. The unremitting pain from the time of the accident, and its material relief by the repetition of blisters. 2d. The notorious shortening, disfiguration, and increased lameness observed at the end of seven weeks from the patient's admission; which led to the discovery of the complete dislocation.—*London Medical Gazette*, 1*st December*, 1832.

32. *Treatment of Prolapsus Ani.*—In prolapsus ani, produced by the invagination of the rectum or by the relaxation and projection of the mucous membrane of the rectum, the following treatment is recommended by Mr. Benjamin

Phillips, in a communication in the *Medical Gazette* for December last, by which he states that he always effects a radical cure of the disease.

"The reduction having been accomplished, the patient is placed upon a bed; the pelvis is then raised by pillows, so as to make the buttocks the most elevated portion of the trunk; the thighs and the folds of the nates are then so far removed from each other as to enable us with facility to make any application in the vicinity of the anus. A cautery, heated to whiteness, is now placed in the hands of the operator; who makes, according to the gravity of the case, one, two, three, or four applications of the cautery to the margin of the anus.

"The exact point to which the application should be made is dependent upon the gravity of the disease: if it be not of long standing nor obstinate, the application should be made to the margin of the anus, but without implicating the mucous membrane; and the length of the eschar should be about half an inch: this should be the uniform length of the eschar.

"If the case be an aggravated one, the application must be made, not only upon the epidermis, but also upon the mucous membrane.

"It must be borne in mind that the object of the operation is to produce such an eschar as will be followed by suppuration; for in the process of cicatrization which follows suppuration, a fibrous tissue is generated, by which the anus will be so effectually contracted as to prevent the possibility of a recurrence of the disease; and it is upon the accomplishment of this effect that the cure almost entirely depends.

"I have found in every case that the stimulus produced by the application of the cautery has occasioned the development in the submucous cellular tissue of an irritation capable of producing a firm and permanent adhesion of the mucous membrane.

"In this operation, if the iron be properly heated, the pain is inconsiderable. And here it must be recollected that the application upon the living body of an iron heated to whiteness, occasions much less pain than the application of one merely heated to redness, and that the latter occasions much less pain than a gray heat.

"No other dressing than a piece of dry lint is required, and this is retained between the folds of the nates, and removed only when the patient goes to stool: before it is replaced, the anus should be washed with warm water, by which any irritating matter will be removed. After the performance of the operation, the contractions of the sphincter, which have been excited by the application of the cautery, continue sometimes for three or four days.

"If any pain be felt for a short time after the application of the cautery, fomentations of warm water will generally remove it.

"I shall conclude this communication by detailing the particulars of two cases of this disease which occurred some months since: one in a spare man of sixty-two, the other in a child of three years. In the elder patient, in whom there was no hæmorrhoidal disease, the mucous membrane projected whenever he went to stool, and had done so during very many years. Occasionally difficulty was experienced in reducing it; and in consequence of this, on some occasions, it had remained unreduced for many days.

"When I saw him, the prolapsus had existed for nearly four days; there was exhaled from it a fœtid sanious discharge, and it was considerably tumefied. The pain which the patient experienced was very severe whenever the tumour came in contact with his linen, or with any other body. Before I could succeed in reducing it, thirty-six leeches were applied, and a constant fomentation with warm water had been employed for some time. After its reduction, the patient was placed in the position I have already described, and the cautery was applied to the anterior and lateral parts of the anus, including about two lines of the mucous membrane. Some pain was experienced for three or four hours; it was relieved by constant fomentation with warm water. The patient did not go to stool for three days after the operation, and when he did, the membrane no longer protruded, neither has it done so to this day. The younger patient had suffered from prolapsus during five months; it occurred every time he went to stool. In this case only one cauterization was made, and that at the distance of a line and a half from the mucous membrane.

"The following day, when the child went to stool, no prolapsus occurred, neither has it since. The cicatrization was completed on the twentieth day."

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33. *Case of Laryngitis successfully treated by Laryngotomy.*—Jeremiah Kentish, aged sixty, a labourer, was admitted on the 23d of October into Middlesex Hospital with general anasarca, his legs and thighs being more swollen than the rest of his body. His respiration was difficult, and attended with a wheezing sound, audible at some distance. He complained also of cough, and of inability to lie down in bed; and stated that during the preceding night, he had been nearly "choked." His pulse was hard, but not full. His bowels were reported regular; his urine scanty, though he had a frequent desire to void it.

He declared that the swelling came on suddenly, only five or six days before; that at first his face was so much swollen that he could scarcely see; that he had no previous illness, except a recently slight shortness of breath; and that he knew no cause of the attack.

Sixteen ounces of blood were directed to be taken from the arm, or more, according to the effect of the bleeding; and eight ounces from the chest, by cupping. Four grains of calomel to be given immediately; and a senna draught four hours afterwards.

24th. He was bled from the arm to twenty-four ounces, with very little relief to his breathing. The blood in some of the vessels only is buffy. He now says that he lost a pint and a half of blood the night before his admission. His bowels have been thoroughly purged. Urine plentiful, acid, and with a pink sediment. The anasarca has almost entirely disappeared. He is now sitting up in bed, breathing with great labour, and with a loud stridulous noise, which accompanies both inspiration and expiration: he refers all his uneasiness to the larynx, and to the ensiform cartilage. He swallows with difficulty, and every effort of deglutition excites a fit of choking with cough. There is no morbid appearance to be seen in the fauces. He has expectorated a small quantity of viscid, yellowish mucus. Every part of the chest sounds well on percussion, and the murmur of respiration can every where be heard, almost drowned, however, in the louder laryngeal noise.

He vomited freely soon after swallowing a scruple of ipecacuanha. This was followed by no improvement.

Twelve ounces of blood to be taken by cupping from the back part of the neck. Three grains of calomel to be given every three hours; and one-third of a grain of the acetate of morphia immediately after the cupping.

During the afternoon the steam of hot water was inhaled for some time, and twenty leeches were applied near the larynx.

In the evening the difficulty of breathing increased still more, and each act of respiration was attended with a loudy croupy sound: his countenance was now anxious and ghastly, and his pulse was less firm. It was Dr. Watson's opinion that he would probably not survive the night, unless the operation of tracheotomy was performed, and that his general condition was such as to afford good ground for hoping that his life might thus be saved. Between 8 and 9 o'clock, he sent to request Sir Charles Bell's assistance, who immediately attended at the hospital. Mr. Joberns and Mr. Arnott were also present; and all agreed upon the propriety of proceeding to the operation forthwith.

Although the patient was placed in a bed at the further extremity of the ward, the crowing sound of his breathing could be heard before entering. Upon approaching him, he was seen sitting forwards, moving with restlessness from one side of the bed to the other, and throwing his arms about, as if seeking for some new place of support. His countenance was pale and expressive of great anxiety, and his lips were of a livid blue colour. His shoulders were in continual action, being alternately elevated and depressed to the utmost; and the prominent larynx moved up and down in a remarkable manner, corresponding with the laboured heaving of his chest. He spoke with sudden, and as it were, convulsive efforts, earnestly expressing how thankful he should be to have the obstruction of his breathing removed, and said that in every other respect he felt easy, being free from pain except at one part, pointing with his finger to the lowest part of the larynx.

It was remarked how very short the space between the larynx and the sternum was, and that when the larynx was drawn down by the action of its muscles, there was scarcely half an inch between the upper part of the cricoid cartilage and that bone.

The operation was begun by pinching up the skin over the space between the thyroid and cricoid cartilages, and then dividing the fold thus made with the knife. Two small arteries, which threw out a stream of blood more than two feet, had to be secured by the ligature. After dissecting a very little, the point of the knife was thrust into the membrane, which joins the forepart of the thyroid and cricoid cartilages, and the blood in the wound showed by its frothiness that the air-passage was opened. The longitudinal slit which was thus made, was enlarged by cutting with the bistoury sideways; and after this was done, it was attempted to introduce a silver canula into the trachea. But as soon as this instrument entered the larynx, a dreadful paroxysm of suffocation was the consequence: the patient gasped, struggled, and drew his breath with a moaning sound, occasionally interrupted for some seconds, as if he were on the point of ceasing to respire altogether; and it was a considerable time before he could be restored from this attack so as to submit again to the operations of the surgeons. It was next attempted to keep the slits of the wound apart by introducing a catheter wire, previously bent upon itself, into the opening; but another paroxysm of suffocation, more alarming than the former, and lasting a greater while, was immediately produced; and the interrupted and vain attempts to express his distress with words, the laborious heavings of his chest, the perspiration starting in drops from his face and brow, all showed the intolerable nature of his sufferings, and how impossible it was to retain such an instrument in the wound. Finding it thus impracticable to preserve a tube within the trachea, it was resolved to remove as much of the membrane which surrounded the opening already made in the larynx, as would permit the air to have a free passage into the lungs. Upon commencing to do this, it was astonishing to every one to what a depth the larynx was withdrawn, it being not less than an inch and a half from the surface of the wound. What principally, however, created a difficulty in the object proposed by the operator was, that the inner membrane of the larynx had become so extremely irritable, that whenever it was touched, however slightly, by the hook, the blades of the scissors, or any other instrument, a fit of coughing and an attack of laborious breathing were excited. Besides this, the larynx had a continual rapid movement upwards and downwards, (resembling the incessant rising and falling of the piston of a steam-engine at work:) and thus the depth of the larynx, the extraordinary irritability of the mucous membrane, the constant movement of the windwipe, together with the filling up of the wound with blood, as quickly as it was sponged away, all conspired to make it an operation of great difficulty to remove the angles of the membrane that were left. Another circumstance was observed deserving of attention, since it prevented respiration being performed through the orifice in the larynx: at each inspiration the lips of the opening, which were seen to be expanded during expiration, became completely shut; and this was obviously consequent upon the thyroid and cricoid cartilages being drawn, by the action of their muscles, more closely together during the act of inspiration. Sir Charles Bell remarked that the spasmodic action producing this shutting of the orifice, even caused the cartilage to pinch the point of his finger when it was applied over the part: and it was from observing this fact, that to some of the witnesses of the operation it appeared indispensably necessary to have a tube inserted into the windpipe.

The cricoid cartilage was so hard, that it was supposed to be ossified: and whenever the bistoury or strong scissors were employed to cut a piece out of it, fresh paroxysms of suffocation were produced. Several loose portions of membrane were removed from the orifice in the larynx, and also those loose portions of the cellular membrane which were in danger of being sucked inwards during respiration were snipped away. Two catheter wires were then employed to hold the integuments apart: this was accomplished by doubling each of the wires, and forming their bent extremity with a hook, resembling that which is sometimes used for holding the eyelids separate in operations upon the eye: one of these hooks being inserted on each side of the exterior wound, and the wires being bent round and fastened at the back of the neck, the surface of the windwipe was kept freely exposed to the air. When this contrivance had been applied for a little, the breathing became greatly improved; and as an indication of the relief which the patient had received, he fell sound asleep. The crowing sound continued, which proved that his breathing was not altogether performed through the wound. An assistant had to be placed behind the bed-chair to prevent the patient's head from nodding forwards in his sleep, which he had already shown deranged the apparatus in the wound. The pulse was 93, and of good strength.

Three grains of calomel to be taken every two hours.

25th. He passed a tolerably good night, sleeping a good deal at intervals. The aperture is smaller by the swelling of the soft parts. The respiration is carried on chiefly through the wound, but with labour and hissing, and occasional expulsion of viscid mucus. Last night a small portion of his powders was observed to issue at the wound; and the same thing has since happened upon his swallowing milk. He can swallow liquids only; and he experiences some difficulty, apparently, when they are in the act of passing through the bag of the pharynx. The sound over the chest, on percussion, is good: some large crepitation is heard by the stethoscope. The pulse is smaller, and wiry. His bowels have been once opened. He is to continue his medicines, and to take arrow root and milk from time to time.

Vespere.—He is much more comfortable; a metallic tube has been introduced into the trachea, through which he respires easily. His breathing is attended with but little noise. He has an urgent occasional cough, which is relieved by expectoration of tough mucus, partly through the tube and partly by the mouth. His bowels have been opened five times. His pulse is above 100, small and sharp; his tongue is clean.

Opii, gr. ½, statim. et adde sing. pulv. opii, gr. ⅓.

26th. He has passed a good night, sleeping a good deal. The pulse is more tranquil and natural. His tongue clean and moist; his countenance is greatly improved; he has had three stools. An opiate enema was administered. In other respects he is the same as at the former report.

27th. He has had a good night. He speaks better, but he does not breathe more easily through the natural passage. His gums are tender, and he has the mercurial fœtor. The calomel is to be omitted.

28th. He is going on well, and his countenance is more natural. A larger tube has been inserted.

29th. He is improving; the tube has been out for about an hour, and he breathes easily through the wound, which is suppurating. When the opening is closed, he soon begins to be distressed; though he seems to breathe better through the natural passage than he did. The fits of coughing have been less frequent and less violent, and the expectoration less viscid. He asks for more food. The act of swallowing is more easy, but it still produces a little coughing; and a small quantity of the fluid which he takes still passes occasionally by the wound. The pulse is 82, of moderate strength; the bowels are open; his gums are very tender. He is to have three eggs a-day, beat up with his milk.

30th. He has passed a bad night, with much coughing and expectoration.

The tube, by some misunderstanding, has been left out since yesterday morning. A portion of his liquid food still appears occasionally at the wound. The bowels are open; his gums tender; the pulse as before. The tube is to be immediately replaced.

31*st.* He has been more comfortable since the tube was replaced, and seems to be much in the same condition as before its removal, except that his pulse is rather more frequent.

Nov. 6*th.*—The tube has been out since the 3d, and he has continued to breathe comfortably through the aperture, which is contracting. He breathes partly through the mouth, and can bear to have the wound closed for a little time without inconvenience. His gums are still tender. He sleeps well; his bowels are regular; his pulse is good, and his appetite keen. Occasionally a small portion of his food shows itself at the wound. He swallows much better, and seldom coughs after doing so.

16*th.* He breathes through the natural passage, and the opening is completely closed. His pulse is 95. He is somewhat hoarse, and says he has a feeling of soreness in the windpipe internally, in the situation of the wound.—*Lond. Med. Gaz. Dec.* 1*st*, 1832.

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34. *Case in which the Arm and Scapula was torn off, without fatal consequences.* By Jno. Braithwaite.—July 12th, 1832. Peter Naidin, aged twelve years, subject to epilepsy, and of a scrofulous habit, whilst working at a carding machine, fell, it is supposed in a fit, and was caught by the right arm in a revolving strap, which carried him up to the ceiling, and tore off the arm and scapula. When seen about half an hour after the accident, he was pale and faint, but there had not been a very profuse hæmorrhage. The axillary plexus of nerves had been pulled out, and hung loose from the detached limb, to the length of two or three inches. The artery was seen pulsating at the bottom of the wound, and was plugged up by a coagulum of blood. The vein was distended, and lay upon the torn muscles like a gorged leech. The integuments presented an appearance as if divided by a sharp cutting instrument, and formed a semilunar flap from above. In attempting to pass a ligature round the vessel it slipped from the grasp, and a violent gush of blood ensued; but it was immediately seized by a tenaculum, and the hæmorrhage restrained by the application of a single strong silk thread. A ligature was also applied to the vein, and a small artery was likewise tied. The flap was carefully adjusted, and secured by two ligatures, and plaster straps and pledgets of carded cotton were laid over the whole, and retained by a broad roller, which bound down the clavicle, and prevented it putting the skin upon the stretch. A little brandy and water was given, the boy was sent home to bed, and a draught, with gtt. xxv. Træ. Opii, was administered. No unfavourable symptoms followed, the boy only complained of slight sickness, and of soreness, as if from bruises. It would be superfluous to state the progress of the symptoms and of the treatment: it will be sufficient to add, that the wound was first dressed on the 16th instant, and a healthy purulent discharge established on the 18th. The ligatures came away on the 3d August; but a large cavity over the site of the scapula continued to discharge very freely. A seton was passed through this to excite the growth of granulation, without effect, but adhesions of the entire flap was subsequently accomplished by injecting a solution of alum, of the strength of a drachm to the half pint. The boy is now perfectly well, and suffers no inconvenience from the scapular end of the clavicle, which does not project so much as to endanger the safety of the skin.—*Lond. Med. Gaz. November 3d*, 1832.

The celebrated case of the miller, whose arm and scapula were torn off, related by Cheselden is well known. A similar case is also recorded by S. F. Scarnell, in the Lancet for 28th April, 1832.

CHOLERA.

35. *Treatment of Cholera by Cold, as Practised by* Dr. Caspar, of Berlin.—Dr. Caspar was first led to employ cold externally in cholera from the advantage derived from it in the treatment of asphyxia from cold. Physicians originally treated such patients, as cholera has since been treated, by the application of heat; but this practice has long since yielded to frictions with ice, snow, &c.

Cold affusions had been previously tried at St. Petersburgh and at Riga, but stimulants had been always given internally at the same time. The result of this method not having answered the hopes which were entertained, it was abandoned. Dr. Caspar does not proceed in this manner. He advises the employment of cold in the boldest manner; and that inert medicines alone should be used in conjunction with this agent. His method is as follows:—The patient is to be placed in an empty bathing-tub, if his skin is dry and flabby; but if, on the contrary, it is covered with a slight moisture, or a profuse clammy sweat, the bathing-tub is to be filled, with water heated to 27° of Reaumur, (92.75 Fahr.) just up to the navel of the patient.

An assistant on each side supports the patient, so as to keep his back from the sides of the bathing-tub; then four or five buckets of iced water are thrown over his head, breast, and back. The quantity of water for a child is from one to three buckets. In very severe cases there is no reäction; in cases less severe the patient sighs, and sometimes makes an effort to escape. The slight reäction which takes place in the commencement would astonish those who have not yet employed this therapeutic agent. At a more advanced period the reäction becomes more sensible: this symptom is favourable.

Conjointly with these perpendicular affusions others are made in a horizontal direction, dashed from a certain distance, with as much force as possible upon the chest and stomach. Two buckets of very cold water are sufficient for this operation, half the quantity for a child. The patients in the commencement exhibit but a very slight, and hardly any impression. These cold dashes ought to be administered as promptly as possible, and repeated according to the severity of the disease every two or four hours. Dr. Caspar says that he has often employed twenty of them in the space of two days or two days and a half; ordinarily ten or twelve will suffice.

After the affusion the patient is to be put to bed, and to be covered up to his neck with woollen blankets well warmed. Under these coverings cold compresses are to be applied over the whole of the chest, abdomen, and back. It is indispensable to change them as soon as they become warm. The author regards these compresses as the principal agent in his method, because they, according to him, cause a new reäction. In the commencement those who are severely affected are equally insensible to these applications, but a little later the reäction becomes visible. It should be regarded as a favourable sign when the patient complains of the cold. Dr. Caspar does not think that cold compresses ought to be applied to the breasts of women who are suckling.

The head is also to be covered with cold compresses. They should even be resorted to in cases of slight cholera when the affusions are not employed. No other treatment, according to this author, so surely prevents the typhoid fever. Besides he has remarked that typhus succeeds rather mild cholera, than that which shows itself in all its intensity.

Dr. Caspar causes the feet of cholera patients to be enveloped in woollen cloths steeped in warm water. As much as he is opposed to the apparatus for heating the trunk of the body, as vapour baths, &c. yet he advises that bottles filled with boiling water should be applied to the feet. Often he even orders the lower extremities up to the knees to be placed morning and evening in warm water, to which six ounces of sulphuric acid has been added.

The application of cold compresses should be continued night and day until the pulse reäppears, or from small and contracted becomes fuller.

Dr. Caspar also gives his patients cold spring water to drink, or if the patient prefers it, cold beer. He rejects entirely the use of warm drinks. He also administers cold water enemata, and considers them as particularly indicated when there is constipation, and when the movement of a fluid in the intestines can be felt on the application of the hand to the abdomen. It is then that this author orders one or two enemata each day, composed of equal parts of cold water and of vinegar, sometimes with the addition of a spoonful of kitchen salt. These enemata generally act very promptly, provided the patients, as is seen in old men, are not affected with a paralysis of the intestinal canal. Notwithstanding this, it must not be imagined that Dr. Caspar employs cold in all cases, and in all the periods of cholera. On the contrary, he modifies it according to the individual cases, and the forms which this disease presents. With this view he indicates three principal varieties of cholera—1st, mild cholera, or that which has been called cholerine. 2d. Asiatic *febrile* cholera, in opposition to that cholera in which there is a complete absence of pulse: but the author himself admits the inaccuracy of this definition. The treatment which he applies to this form is that which we have described previously. He joins to that an emetic, if the patient exhibit signs of gastric embarrassment, but only in that case. 3d. Cholera *sine pulsu* or cholera asphyxia, that which demands at the first onset the bold use of the affusions and cold dashes.

By this treatment reäction is speedily induced. Then Dr. Caspar is accustomed to draw twelve or fourteen ounces of blood, or fewer if the symptoms of local congestion be less marked. The compresses of iced water are continued during this period only upon the head. He prescribes besides, in the greater number of cases, calomel in conjunction with rhubarb: from three to four grains of calomel, with four grains of rhubarb, every hour in the case of adults. Dr. Caspar has renounced completely the employment of stimulants, even in the typhoid stage, during which he continues the affusions of cold water and compresses to the head.

Although Dr. Caspar points out the method of treatment by cold as the most advantageous, he is far from thinking that it will effect a cure in the majority of cases; he admits that the greater number of cholera patients die whatever may be the treatment which is adopted. However, the following are the conclusions which he believes may be drawn from his observations upon the comparative use of cold and of other remedial methods in cholera.

1st. The treatment by cold is suited to the nature of this disease, (Dr. Caspar regards cholera as consisting in a paralysis of the cutaneous system,) or if that pathology is not admitted, to all its most marked phenomena.

2d. When applied with circumspection, more patients are cured by it than by any other method.

3d. It produces a surprising amelioration in the most severe forms, and in the most serious period of cholera, when no other medication has any effect.

4th. It more surely than any other method prevents the consecutive typhus.

5th. It suits itself more easily to the taste and wants of the patients than the stimulating method.

6th. In cases where death is inevitable it prolongs life as long as possible.

7th. This method is simple, costing very little, and easy of application.

Dr. Caspar has added to the exposition of his method, a great many cases which attest its success.

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36. *Statistics of Cholera Morbus in London.*—According to the London bills of mortality, the number of burials for the year 1832 was 28,606, whilst those for 1831 amounted to 25,337, being an increase of 3,269 for the last over the preceding year. It further appears that the deaths from cholera amounted to only 3,200, showing a trifling increase in the burials of 1832, when all the cholera cases are deducted. The epidemic first assumed importance in London during the week commencing with March 6th, when there were twenty-one

reported burials; and its violence subsided with the week ending on the 8th of May, there being in the succeeding weekly report only three deaths arising from the disease. In this space of ten weeks the total number of burials was 6,598, 557 of which are stated to have arisen from cholera; while in the corresponding weeks of 1831, there were only 4,107 burials of those who died from all kinds of disorders. For a short time the cholera was nearly extinct; but in the week beginning July 3d, we find fifty-five deaths occurring from that complaint, which then assumed a severe character until the week ending October 30th, at which time we find only thirteen deaths happening in the interval. During this period of seventeen weeks, the total number of burials was 10,357; the number from cholera being 2,403. In the corresponding weeks of the preceding year the aggregate amount of interments was only 6,114; so that we plainly perceive the mortality from other diseases became more intense during the whole time that the malignant cholera was in action. It is a fact, moreover, which holds true in the detail, that the mortality from independent diseases was not lessened, even in those weeks when the cholera was especially fatal; but that, on the contrary, the deaths from other causes were mostly beyond the average, after the deaths from cholera have been deducted. This will be seen in a moment by reference to the following table.

Weeks of the Years 1831–2.	Deaths in 1832.		Deaths in 1831 from all Diseases.
	From Cholera.	Other Diseases.	
27th.	55	476	244
28th.	108	496	352
29th.	158	450	529
30th.	380	588	350
31st.	305	488	346
32d.	127	534	592
33d.	103	379	332
34th.	116	428	382
35th.	274	747	277
36th.	157	267	464
37th.	257	697	650
38th.	154	514	269
39th.	39	442	472
40th.	73	548	253

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37. *Comparative View of the Various Modes of Treatment adopted in Cholera, within the Jurisdiction of the City of London Board of Health, transmitted by* Mr. F. De Grave.

	Cases.	Deaths.	Recoveries.	Deaths per cent.	Recoveries per cent.
Calomel and opium -	196	112	84	57.14	42.86
Opium - - - - - -	81	47	34	58.	42.
Calomel - - - - - -	75	35	40	46.66	53.34
Stimulants - - - -	63	42	21	66.66	33.33
Combination of salts proposed by Dr. Stevens	25	22	3	88.	12.
Combination of salts used at Greville st. hospital	26	8	18	30.77	69.23
Venous injection - -	20	18	2	90.	10.
Miscellaneous - - -	17	8	9	47.06	52.94

Lancet, Feb. 2, 1833.

38. *Antiphlogistic Treatment of Cholera.*—During the first invasion of Paris by cholera, 23 patients were treated by Dr. Huet Despres in the temporary hospital *De la Réserve.* The treatment was essentially antiphlogistic. Of the number mentioned 4 only died, 19 were cured.—*Annales de la Méd. Phys. June,* 1832.

CHEMISTRY.

39. *Analysis of Camphor and some Volatile Oils.*—M. Dumas observes, that essential oils may be divided into—first, those which are entirely composed of carbon and hydrogen, such as the oil of lemon, turpentine, and naphtha; secondly, oxygenated oils, as camphor, oil of aniseed, and many others; thirdly, the essential oils which admit of a new element in their composition, as the oil of mustard, which contains sulphur, and that of almonds, which contains azote.

Some fine isolated crystals of camphor taken from the centre of a sublimed cake of that substance, yielded such proportions of carbonic acid and water as by M. Dumas' calculation gave per cent. very nearly

Carbon	79.28
Oxygen	10.36
Hydrogen	10.36
	100.

Neglecting on this, as on other occasions, the atomic weights adopted by M. Dumas, it will be seen that camphor is composed of

Ten atoms carbon	6 × 10 =	60	or 79
One atom oxygen		8	or 10.5
Eight atoms hydrogen	1 × 8 =	8	or 10.5
		76	100.

Proust discovered the existence of camphor in oil of lavender; M. Dumas analysed some crystals of lavender camphor procured from the College de France: the results were perfectly similar to those obtained from common camphor.

M. Dumas considers camphor as composed of a peculiar carburetted hydrogen, (to which he gives the name of *camphogen,)* and oxygen, or ten atoms carbon + eight atoms hydrogen; or

Camphogen	68	89.4
One atom oxygen	8	10.6
	76	100.

The density of the vapour of camphor was found to be 5.468, and M. Dumas observes, that supposing it be composed of a volume of camphogen = 4.7634 + half a volume of oxygen = 0.5513, its density would be 5.3147, which comes very near to the experimental result. Oil of turpentine was found to be constituted precisely of the same proportions of carbon and hydrogen as camphogen:—the density of its vapour was by experiment 4.765 to 4.764, which agrees with the analysis.

When oil of peppermint is cooled to about 32°, it yields prismatic crystals, readily separable from the fluid part. These crystals pressed between folds of blotting paper, are colourless; fusible at 75° Fahr.; volatile without decomposition, and again crystallize; they are very slightly soluble in water, but dissolve in alcohol, æther and oils. They have the smell and taste of peppermint in a great degree. By analysis it appeared that this camphor was composed of 77.3

carbon, 12.6 hydrogen, and 10.1 oxygen in 100 parts; and it differs from common camphor in containing two more volumes of hydrogen.

The solid portion of oil of aniseed yielded by analysis, in 100 parts, 81.35 carbon, 8.26 hydrogen, 10.39 carbon: by adjusting these results, slightly, it appears that oil of aniseed contains two volumes less of hydrogen than common camphor.

M. Dumas conceives that essential oils are compounds of hydrogen and carbon, which, by oxydizement, produce camphors; this degree of oxydizement, however, is not to be confounded with the higher degree of it, which occurs when the oils are freely exposed in thin strata to the air, for they are then converted into resins.

It appears from these experiments, that

10	carbon	10	hydrogen	1 concrete oil of peppermint.
10	do.	8	do.	1 oxygen form common camphor.
10	do.	8	do.	oil of turpentine.
10	do.	6	do.	1 concrete oil of aniseed.
10	do.	4	do.	naphthaline.

M. Dumas is disposed to believe that the absorption of oxygen by essential oils, produces different effects according as it occurs under the influence of water, or when dry. The constitution of pure oil of lemons appears to be perfectly similar to that of oil of turpentine by M. Dumas' analysis, and it differs very little from that of M. Th. de Saussure. M. Dumas finds naphtha to be composed of 6 atoms carbon + 5 hydrogen; a conclusion which also agrees nearly with that of M. de Saussure; the density of its vapour should therefore be 2.870, which varies but slightly from that obtained by experiment.—*Rep. Pat. Invent. March,* 1833.

40. *Process for Obtaining Conia.*—Mr. Golding Bird recommends the following process for obtaining conia. "Digest the fresh leaves of conium maculatum in alcohol, and set aside for some days and strain the mixture; boil the alcoholic tincture for a few minutes, and when cold filter. By this operation a solution is obtained of malate of conia with extractive and some salts; decolorize with animal carbon, again filter, and add to the clear liquor a solution of carbonate of soda. A precipitate of carbonate of conia will fall, which must be dried and dissolved in acetic acid; ammonia will now throw down conia quite pure.

"Conia, as thus obtained, is a powder perfectly white, slightly soluble in water, and very soluble in alcohol and æther. It turns red litmus paper blue, and combines with acids, forming in some cases crystalline compounds, in others gummy masses. When heated with nitric acid, a brownish-yellow solution is formed, and, by evaporation, oxalic acid is obtained. When dilute nitric acid is used, a nitrate is obtained in fine needles.

"When attempting to prepare conia according to the German process, after obtaining the spirituous extract and adding water and protoxide of lead, a lamp heat was applied: a dense, fœtid, suffocating vapour was given off, smelling intensely strong of hemlock, and producing a violent sensation of asphyxia; while, on the surface of the fluid, there appeared films of an oily matter. This operation was repeated in an alembic, and the vapours were condensed in a cool receiver. I thus obtained a volatile oil, very inflammable, and smelling powerfully of hemlock."—*Lond. Med. Gaz. November 3d,* 1832.

41. *Analysis of the Leaves of the Conium Maculatum.*—Mr. Golding Bird has obtained the following results from the proximate analysis of the leaves of the conium maculatum, 1. Malate of conia; 2. A fœtid volatile oil; 3. Chlorophylle; 4. Resin; 5. Fœculin; 6. Albumen; 7. Lignin; 8. Acetates of potass and ammonia; 9. Malate of lime. The ashes contained traces of, 1. Chloride of sodium; 2. Protoxide of iron; 3. Magnesia; 4. Lime.—*Ibid.*

AMERICAN INTELLIGENCE.

Case of Scarlatina Maligna successfully treated by Cold Water. By Samuel Jackson, M. D. of Northumberland.—[Communicated in a letter to the Editor.]—My oldest daughter, of 11 years, was, a few weeks ago, seized of cynanche maligna, with far more fever than usually attends that malady. Her fauces were universally inflamed, and on the second day, the cineritious specks appeared. I bled her in the height of the evening paroxysm to 8 or 10 ounces, though I knew that the fever was certainly typhus, with the pulse 160. But the difficulty with me consisted in the choice of gargles. From some experience and much contemplation last fall, I had fixed my mind on sac. sat. as the most proper *till* sloughing might take place.

To this then I resorted, but quickly became dissatisfied lest she might swallow so much as to cause lead colic. The nitrate of silver was then tried, 24 grains to the ounce of water. From this I had some hope, derived partly from the Medical Recorder, Vol. XIII. p. 123, and partly from the known effects of a milder solution in ophthalmia. But I soon became dissatisfied with the use of a stimulus to parts so highly inflamed, notwithstanding all that has been said in favour of stimuli in these cases. My anxiety on this point became excessive, for I was possessed of the opinion that on the speedy improvement of the local disease depended the fate of my child. I had lately seen cases successfully treated by my friend Dr. Vanvolsap of Lewisburgh, eight miles above us, by means of stimulating gargles, particularly the capsicum, but I could not prevail on myself to use them till further mortification might reduce the inflammatory action.

Cold water she desired above all things, and I determined to give it a fair trial. She was then permitted to drink the coldest ice water, and to hold ice in her mouth. But this last experiment was dangerous lest she might swallow it, and bring on spasms of the stomach. It was then enclosed in a gauze bag, and put far into her mouth to be dissolved and swallowed. Now for the first time, the fourth day of her disease, I felt satisfied with my prescriptions, and she was desired to use the ice freely, and to drink largely of ice water. The good effects were immediate, surprising, incredible, and almost divine. Within a few hours the pulse was reduced from 160 to 120; the circumscribed crimson disappeared from her cheeks; the extremities became warmer as the fauces and stomach were cooled; the whole countenance was changed; the typhus distress left it, and something of the vivacity of common fever supervened. No other remedy was thenceforward used except some laxatives, and in three days from the time the ice was tried, there was no fever left, nor any sign of inflammation in the fauces.

This disease was, last fall, epidemic a few miles above us, and some died. One of my other children had it in the course of the winter, but very slightly; and, as I hope to have no further need of this remedy, and can give it no further trials at present, I commit it to your consideration. I have just heard that scarlatina cynanchica is mortal in your city, and as this is certainly the same disease as the cynanche maligna, I hope you will give my remedy whatever attention it may seem to merit independent of what little I have done.

Account of the Epidemic Cholera as it occurred in Newcastle, Delaware. By James Couper, Jr. M. D. [Communicated in a letter to Dr. J. K. Mitchell.]—In compliance with your request, I send you the following account of the epidemic cholera as it appeared in the town of Newcastle, Delaware, in the month of August, and the beginning of September of this year, (1832.)

The town contains a population of about one thousand, and enjoyed in the early part of June last, an almost total exemption from disease of every description. On the 18th of that month, however, I saw the first case of ordinary cholera, which occurred in my practice during the summer. This was soon followed by other cases; and between that day and the 23d of July I was called on to prescribe for thirty-three instances of that disease—a very unusual number, when compared with the practice of former years. Most of the cases were mild and very manageable by the common remedies, but some of them were severe, accompanied by spasms of the extremities and light coloured discharges, and proved difficult of management. It is remarkable that the proportion of severe cases during the period above-mentioned corresponded very closely with that of the fatal cases of the subsequent epidemic. No death occurred among these thirty-three patients.

On the 25th of July I left home for about a fortnight. While I was absent, two or three cases of the epidemic cholera were landed at Newcastle from vessels navigating the Delaware; but the first case among our own population occurred in the person of a little boy on the 6th of August. This child had not been out of town. From this time the disease continued to extend until the 17th of August, when it ceased for a while, but reäppeared on the 29th of the same month, and continued until the 5th of September, when, as we hope, it finally disappeared from among us.

The exciting causes of the disease were various, and embraced many irregularities in diet, drink and exposure. Eleven of the first cases had a common exciting cause, namely, oysters in a state of commencing putrefaction. A vessel arrived here a day or two before the date of the first case, with a cargo of oysters in that condition, and having on board the body of a man dead of cholera. So far as I can learn the particulars, all who partook of these oysters were more or less severely affected with cholera, and but few of them escaped with their lives. Fruits also, either unripe or in excess, were frequently the exciting cause of the disease.

The symptoms of confirmed cholera here, were those which have been so often and so accurately described by writers upon the subject, namely, vomiting and purging of the "rice water" fluid; total suppression of bile and urine: cold tongue and breath; pain in the epigastric region; incessant thirst; cramps in the extremities and abdominal muscles, and in one fatal case which I saw, spasms of the muscles depressing the lower jaw; cold skin, corrugated upon the hands and feet; profuse cold perspiration; blueness of the nails, lips and tongue; livid circles around the eyes; change or loss of voice, and a peculiar, utterly indescribable expression of anxiety in the countenance. The pulse varied considerably in different cases. In some it was full and strong at first; while in others it was feeble from the beginning. The skin, though usually cold, was found to be warm in two or three of the most severe instances. The blood, when drawn, was uniformly black and thick, but these appearances were not confined to cholera cases, for I found them in blood, drawn at an advanced period of pregnancy to relieve fulness of the head, in the case of a lady, who had never suffered from any of the symptoms of the then prevailing epidemic. The mind was undisturbed in a large majority of cases, though in one instance delirium occurred, and in another coma, which soon passed off and left the patient, a young negro man, perfectly frantic. In this state he continued till his death, requiring constantly the strength of several assistants to confine him to his bed. The first cases were much more violent than most of those that came after, although one of the very last cases was marked by as great malignancy as any which preceded it. Every case which came under my care had suffered from a previous diarrhœa. During the continuance of the epidemic, affections of the stomach and bowels were almost universal among our population, and all complained of greater fatigue from muscular exertion than they had ever before experienced.

The treatment consisted of blood-letting, when that remedy was indicated by a strong, full or oppressed pulse; free doses of calomel in conjunction with camphor and opium, or the sulphate of morphia; very liberal inunction with camphorated mercurial ointment and Cayenne pepper; sinapisms to the epigastric region and extremities; large injections of warm water, with or without brandy or Port wine and laudanum, according to circumstances; dry heat to the extremities by means of bags of heated sand, and cups and blisters to overcome local determinations. Whenever time could be obtained to produce the slightest constitutional effect of mercury, recovery always took place. My intercourse with cholera soon satisfied me that opium, laudanum, and sulphate of morphia in large doses were really much less necessary in the treatment of this disease than I had expected. In most cases the vomiting and purging were not very difficult to overcome, and in many of the very worst instances these discharges were comparatively trifling. A similar disappointment occurred to me in the application of heat. Though it appeared to be very urgently demanded by the symptoms, still the benefit was by no means so great from its use, as from the report of others, I had been led to expect. The vapour of burning alcohol, which I applied in one or two cases, by means of Jenning's apparatus, seemed to me not only not beneficial, but positively injurious, by increasing the distress and restlessness of the patient. The same objection may, perhaps, apply to the very free use of bags filled with highly heated materials—a practice which obtains so generally in the management of the cold surface of cholera patients. As to those cases which present a very doubtful pulse, when the question of blood-letting comes before the practitioner, I would remark, that though some such were saved by that remedy, still in a majority of the patients the pulse was found to sink under the loss of a very small quantity of blood. The premonitory diarrhœa was often difficult of management, and required the free use of the lancet and the subsequent employment of large doses of the sugar of lead in combination with calomel and opium.

Forty-one cases of the epidemic cholera occurred in my practice. Twenty-seven of these belonged to the white population, and fourteen to the black. The former included nineteen male and six female adults, and two male children—the latter four male and nine female adults, and one female child.

Of these forty-one, fifteen patients died, viz. seven male adults and one male child, (whites,) and three male and four female adults, (blacks.)

There were two instances of second attack and one of relapse. These three patients recovered.

While the epidemic prevailed in this place, we had little else than that single disease in its various forms to treat; and now that it has passed over, it has not left behind it even the ordinary, small amount of autumnal disease.

Newcastle, Delaware, Nov. 8th, 1832.

Case of Traumatic Tetanus, successfully treated. By A. C. **Baldwin**, M. D. of Georgia.—On the 7th of January 1833, I was called to visit a negro boy, aged about six years. On examination I found he was labouring under tetanus, and that his body was bent back by the spasmodic contraction of the muscles, forming that variety of the disease called opisthotonos. A splinter in the foot was the only cause to which the origin of the affection could be attributed, and this had been removed on the day preceding my visit. The wound had suppurated, and on being opened, the splinter had been discharged.

Aware of the great torpor of the bowels in tetanic affections, I determined on the exhibition of a cathartic as soon as possible, with the hope of securing all the advantage which could be derived from early purging, before administering the usual remedies employed in such cases. A combination of equal parts of the oil of turpentine and castor oil was accordingly directed, in doses of a table-spoonful frequently repeated. A blister was applied to the spine, and the foot was enveloped in a lye poultice. On the day following, I found that the blister had drawn well, and that the bowels had been freely evacuated; yet my patient was growing worse, and could swallow only with the greatest difficulty. To relieve pain, and to produce relaxation, I directed a combination of equal parts of laudanum and antimonial wine, to be taken in tea-spoonful doses, every one, two or three hours, as the circumstances of the case might require. The more violent the pain, and the more formidable the spasm, the more frequently was the medicine to be exhibited, and vice versa. To assist in fulfilling the same indications, a poultice of tobacco was prescribed as an application to the blistered surface with the express direction, that it should be instantly removed if any of those untoward symptoms should occur which usually characterize the deleterious operation of this powerful article.

The opium and antimony thus combined, acting conjointly with the poultice of tobacco, seemed to controul the disease, and from that circumstance were continued from day to day; and, with the exception of a little castor oil, occasionally administered, were almost the only remedies employed in the management of the case during the time of its continuance. As soon as one blister would heal, a second was applied on or near the same place, and the raw surface was dressed as before stated. In the preparation of the poultice which was employed, half a pint of boiling water was poured on an ounce of tobacco, and after a strong infusion was formed, sufficient quantity of bread was added to give the proper consistence.

Although the progress of the disease was checked by the opium, antimony, and tobacco, yet entire relief was not immediately obtained, and the affection remained for some weeks stationary, during which time the patient was scarce able to move without renewing or increasing the spasm, and could swallow nothing but liquids, and those with considerable difficulty. It was between the third and fourth week when prospects of a recovery began to make their appearance. From that time the affection very gradually diminished, and he by degrees acquired the power to move, sit, and stand up, although it was six or seven weeks before he was able to walk any of consequence. At this time, rather more than two months since the commencement of the attack, he is walking about perfectly recovered, although considerable stiffness yet remains, and he has not acquired that power over the muscles which he possessed before the commencement of the disease.

Having witnessed the treatment of three or four cases of tetanus, in which opium in large doses was the only remedy employed, every one of which terminated fatally, I took up the idea, that this formidable complaint could not be controlled by this remedy alone, or that if the spasm yielded to its remedial influence, the injurious effects of such large doses of this article on the system, more than counterbalanced the benefit thus acquired, and probably in a majority of cases contributed in bringing about a fatal termination. Influenced by that opinion, I determined in the management of this case, to give it in such doses as I thought would secure its anodyne and antispasmodic effects without producing those injurious consequences to which I have adverted; and at the same time to combine with it such remedies as would probably assist in fulfilling the indications desired. Whether my opinion was right or wrong is left for others to determine. The result, at all events, of the case in which my practical views were enforced, was favourable, and would seem to justify the practice. The union of the opium and antimony seemed to have this good effect; the combination thus formed was less heating than the laudanum would have been if given alone, and by its relaxing influence acted on the skin as a diaphoretic. Neither nausea, nor vomiting, nor any other unpleasant effect resulted from the application of the tobacco. On the contrary, relief was always experienced from its operation, whether employed alone or in combination with the remedies already enumerated.

St. Clair, Burke County, Georgia, March 11*th*, 1833.

STATEMENT OF DEATHS,

With the Diseases and Ages, in the City and Liberties of Philadelphia, from the 1st of January, 1832, to the 1st of January, 1833.

DISEASES.	Males.	Females.	Boys.	Girls.	Under 1 year.	From 1 to 2.	From 2 to 5.	From 5 to 10.	From 10 to 15.	From 15 to 20.	From 20 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.	From 60 to 70.	From 70 to 80.	From 80 to 90.	From 90 to 100.	From 100 to 110.	From 110 to 120.	Total.
Apoplexy	39	39	4	4	2	3	0	0	0	3	8	15	14	11	10	10	1	1	0	0	78
of the Lungs	1	2	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	3
Atrophy	14	9	11	6	8	3	3	2	0	1	0	1	1	1	0	3	0	0	0	0	23
Abscess	11	8	6	2	4	1	1	1	0	1	3	4	2	2	0	0	0	0	0	0	19
in the Brain	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Liver	2	1	0	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
Lungs	2	2	1	1	0	0	0	2	0	0	0	1	0	0	1	0	0	0	0	0	4
Disease of the Brain	1	2	1	2	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Throat and Chest	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Asthma	4	7	0	0	0	0	0	0	0	0	1	0	1	2	2	4	1	0	0	0	11
Aneurism	3	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3
Aphthæ	2	4	2	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Angina Pectoris	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Arachnitis	2	2	2	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	4
Asphyxia	10	2	4	2	6	0	0	0	0	0	4	1	1	0	0	0	0	0	0	0	12
Bronchitis	50	47	40	30	31	12	19	6	0	2	8	3	5	3	2	4	1	1	0	0	97
Burns	7	14	6	10	3	1	5	5	1	1	1	1	1	0	0	2	0	0	0	0	21
Blows received in Fighting	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Cancer	8	20	2	2	1	0	1	1	1	0	1	5	8	3	4	2	1	0	0	0	28
Consumption	338	343	58	74	32	16	22	17	10	35	183	151	111	47	32	20	4	1	0	0	681
Convulsions	175	167	160	147	196	52	41	11	7	0	10	13	7	2	1	1	1	0	0	0	342
Catarrh	29	22	26	21	25	10	7	4	1	0	0	0	1	1	0	1	1	0	0	0	51
Childbed	0	5	0	1	0	0	0	0	0	1	1	2	1	0	0	0	0	0	0	0	5
Croup	62	48	60	47	38	25	36	6	2	0	1	0	0	1	1	0	0	0	0	0	110
Casualties	14	6	5	6	0	1	3	3	2	2	3	3	0	3	0	0	0	0	0	0	20
Colic	7	6	5	3	6	1	0	0	0	1	2	0	1	1	1	0	0	0	0	0	13
Constipation	2	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	3
Caries	2	1	1	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3
Chicken Pox	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Concussion of the Brain	2	1	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	3

(Table Continued.)

DISEASES.	Males.	Females.	Boys.	Girls.	Under 1 year.	From 1 to 2.	From 2 to 5.	From 5 to 10.	From 10 to 15.	From 15 to 20.	From 20 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.	From 60 to 70.	From 70 to 80.	From 80 to 90.	From 90 to 100.	From 100 to 110.	From 110 to 120.	Total.
Congestion of the Brain - - -	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Lungs - - -	5	1	1	1	0	2	0	0	0	0	2	0	0	0	2	0	0	0	0	0	6
Cramp in the Stomach - - -	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Cachexy - - - - - - -	0	3	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	3
Cephalalgia - - - - - -	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Cerebral Irritation - - - -	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Cholera Morbus - - - - -	46	27	13	3	0	2	5	7	1	1	14	15	9	9	5	5	0	0	0	0	73
Do. Malignant - - - -	563	385	74	50	4	5	33	39	20	23	185	237	168	103	75	48	6	1	1	0	948
Do. Infantum - - - -	201	165	201	165	228	106	28	2	2	0	0	0	0	0	0	0	0	0	0	0	366
Coup de Soleil - - - - -	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Chorea Sancti Viti - - - -	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Debility - - - - - - -	138	121	95	70	136	11	12	4	1	1	6	8	8	18	22	18	11	3	0	0	259
Diarrhœa - - - - - - -	96	76	60	53	49	33	21	8	1	1	13	11	9	9	8	7	2	0	0	0	172
Dropsy - - - - - - -	53	62	19	19	5	5	11	11	4	2	11	17	17	15	7	5	4	1	0	0	115
in the Head - - - -	109	78	102	78	58	56	43	20	2	1	3	3	0	1	0	0	0	0	0	0	187
Breast - - - -	33	29	10	12	4	2	8	3	2	3	5	8	7	8	5	4	3	0	0	0	62
Spine - - - -	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Dyspepsia - - - - - - -	3	4	0	1	0	1	0	0	0	0	0	0	2	3	0	0	1	0	0	0	7
Disease of the Spine - - - -	2	2	1	2	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	4
Heart - - - -	11	7	5	4	2	2	2	0	2	1	1	2	0	1	3	1	1	0	0	0	18
Hip Joint - - -	1	2	1	2	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	3
Liver - - - -	2	3	1	2	2	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
Head - - - -	5	1	5	1	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Chest - - - -	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
Bladder - - -	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Stomach - - -	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Bowels - - -	2	1	1	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	3
Womb - - - -	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Dysentery - - - - - - -	47	31	25	14	8	11	9	8	1	2	4	11	5	4	9	4	2	0	0	0	78
Drowned - - - - - - -	52	3	8	2	0	1	1	2	4	2	10	21	6	7	1	0	0	0	0	0	55
Decay - - - - - - -	2	2	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	4

Diabetes	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Drinking Cold Water	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
Epilepsy	2	5	1	2	2	0	1	0	0	0	1	1	1	0	1	0	0	0	0	0	7
Erysipelas	6	15	2	8	8	1	1	0	0	0	1	4	1	3	2	0	0	0	0	0	21
Effusion on Lungs and Brain	4	0	3	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	4
Enlargement of the Heart	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Spleen	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Empyema	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Eruptions	4	2	4	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Fever	46	35	23	16	10	6	11	7	2	3	16	7	7	5	4	2	1	0	0	0	81
Scarlet	154	153	150	147	22	53	144	68	9	1	3	4	0	3	0	0	0	0	0	0	307
Hectic	7	3	4	1	0	0	0	3	1	1	3	1	1	0	0	0	0	0	0	0	10
Typhus	110	86	10	15	3	1	4	6	4	7	52	44	32	22	17	2	2	0	0	0	196
Intermittent	9	6	8	4	4	2	4	1	1	0	0	0	1	0	1	0	1	0	0	0	15
Remittent	27	28	8	17	3	2	8	4	3	5	7	7	6	3	4	0	3	0	0	0	55
Bilious	28	11	8	4	3	2	3	0	3	1	12	10	2	2	0	1	0	0	0	0	39
Puerperal	0	8	0	0	0	0	0	0	0	0	3	2	3	0	0	0	0	0	0	0	8
Catarrhal	23	16	21	15	21	8	4	1	1	1	0	1	1	0	0	0	0	1	0	0	39
Spotted	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Nervous	9	5	3	0	0	0	0	2	1	0	4	4	1	1	1	0	0	0	0	0	14
Brain	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Continued	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
Found Dead	14	11	6	5	9	1	1	0	0	0	0	6	7	0	0	1	0	0	0	0	25
Fistula	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Fungus Hæmatodes	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Fracture	3	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	4
Gout	1	2	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	3
Gravel	3	0	1	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	3
Gun-shot Wound	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Hernia	2	5	0	0	0	0	0	0	0	0	0	1	1	1	2	2	0	0	0	0	7
Hæmorrhage	16	14	4	5	4	0	2	1	0	2	7	9	1	2	2	0	0	0	0	0	30
Hysterics	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Inflammation	2	3	0	3	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	5
of the Lungs	124	101	77	54	43	43	29	7	5	4	19	20	19	15	9	10	2	0	0	0	225
Breast	10	9	6	6	5	3	3	1	0	0	4	0	0	2	0	1	0	0	0	0	19
Bowels	73	52	47	22	32	9	11	7	4	6	19	9	12	6	6	1	2	1	0	0	125
Brain	57	45	34	24	17	9	11	12	4	5	21	11	6	2	1	1	2	0	0	0	102

(Table Continued.)

DISEASES.	Males.	Females.	Boys.	Girls.	Under 1 year.	From 1 to 2.	From 2 to 5.	From 5 to 10.	From 10 to 15.	From 15 to 20.	From 20 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.	From 60 to 70.	From 70 to 80.	From 80 to 90.	From 90 to 100.	From 100 to 110.	From 110 to 120.	Total.
Inflammation of the Stomach - -	19	22	7	10	3	3	8	2	1	0	7	5	3	4	4	1	0	0	0	0	41
Liver - - -	14	7	1	3	2	0	0	1	0	1	4	3	3	5	1	1	0	0	0	0	21
Heart - - -	4	0	3	0	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	4
Kidneys - -	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Bladder - -	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
of a Vein - - -	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
of the Throat - -	24	17	22	17	6	11	15	6	0	1	0	0	1	0	0	1	0	0	0	0	41
Womb - -	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Influenza - - - - - -	21	20	10	14	12	7	3	1	1	0	0	5	3	0	4	2	2	1	0	0	41
Insanity - - - - - -	3	5	0	0	0	0	0	0	0	0	1	3	2	1	1	0	0	0	0	0	8
Intemperance - - - - -	4	1	0	0	0	0	0	0	0	0	3	1	1	0	0	0	0	0	0	0	5
Introsusception - - -	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Irritation of the Heart - - -	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Intestines - - -	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Inanition - - - - - -	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Injury of the Spine - - - -	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Inebriety - - - - - -	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Jaundice - - - - - -	3	3	2	0	1	0	1	0	0	0	1	0	1	0	1	1	0	0	0	0	6
Laudanum to excess - - - -	4	8	1	3	3	0	0	0	0	1	3	4	1	0	0	0	0	0	0	0	12
Locked jaw - - - - -	3	0	1	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3
Mortification - - - - -	12	10	5	5	1	2	5	2	0	0	1	4	3	0	1	1	1	1	0	0	22
Mania - - - - - -	2	4	0	0	0	0	0	0	0	0	1	1	4	0	0	0	0	0	0	0	6
a Potu - - - - -	124	26	0	1	0	0	0	0	0	1	43	46	41	13	4	2	0	0	0	0	150
Measles - - - - - -	62	56	62	56	22	45	37	12	1	1	0	0	0	0	0	0	0	0	0	0	118
Malformation - - - - -	5	1	5	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Mumps - - - - - -	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Marasmus - - - - - -	28	30	26	27	19	21	10	0	1	2	2	1	1	0	1	0	0	0	0	0	58
Nervous affection - - - -	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Old age - - - - - -	32	60	0	0	0	0	0	0	0	0	0	0	0	0	2	26	47	11	5	1	92
Obstruction of the Liver - - -	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1

Ossification of the semilunar valves of the aorta	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Pleurisy	14	5	0	0	0	0	0	0	0	0	2	6	7	1	1	2	0	0	0	0	19
Palsy	20	27	2	4	2	0	0	1	1	2	4	2	4	8	7	11	3	2	0	0	47
Perished of cold	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Poison	0	3	0	2	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	3
Quinsey	4	3	4	3	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Rheumatism	1	4	0	1	0	0	1	0	0	0	2	1	0	0	0	1	0	0	0	0	5
Rupture of Blood Vessel	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
Small-Pox	21	16	8	5	4	3	3	2	1	0	18	5	1	0	0	0	0	0	0	0	37
Still-Born	155	119	155	119	274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	274
Sudden	26	26	10	13	13	1	4	3	1	1	2	14	6	2	2	3	0	0	0	0	52
Scrofula	15	10	10	9	6	2	4	3	2	2	1	1	2	1	1	0	0	0	0	0	25
Spasms	6	0	6	0	4	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Scirrhus	1	3	0	1	0	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	4
Suicide	3	2	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	5
Syphilis	3	5	1	1	0	0	1	0	0	1	3	3	0	0	0	0	0	0	0	0	8
Sulphate Morphia to excess	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Scalding	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Scurvy	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Teething	11	3	11	3	7	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Unknown	82	50	32	29	33	13	10	3	1	1	14	29	13	8	4	2	1	0	0	0	152
Ulcers	4	7	1	7	1	4	2	0	0	1	0	0	2	1	0	0	0	0	0	0	11
Violence	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
Varioloid	3	3	2	3	3	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	6
Vomiting	2	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Whooping-Cough	26	32	26	32	30	12	11	4	1	0	0	0	0	0	0	0	0	0	0	0	58
Worms	6	6	6	6	0	1	7	4	0	0	0	0	0	0	0	0	0	0	0	0	12
White-swelling	2	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Wounds	4	0	1	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	4
	3706	2993	1871	1578	1521	643	689	336	118	142	791	836	599	375	285	218	111	28	6	1	6699

Of the above there were Males of 20 years and upwards, 1,835; under 20 years, 1,871; 1,415 Females of 20 years and upwards, and 1,578 under 20 years.

There were 590 returns received at the Health Office, of persons who died in the Alms-house, in the City, and 45 in the Alms-house at Blockley, during the year; 706 people of colour are included in the total number of deaths.

Agreeable to returns made at the Health Office, and collected from 162 Practitioners of Midwifery, there have been born in the City and Liberties, from the 1st of January, 1832, to the 1st of January, 1833, 3,834 male, and 3,419 female children; making the total number of births 7,253, leaving a difference between the births and deaths of 554.

Deaths in each Month of the above period.

	Adults.	Children.	Total.
January	253	361	614
February	151	324	475
March	218	298	516
April	215	257	472
May	274	299	573
June	179	211	390
July	200	365	565
August	1099	590	1689
September	215	234	449
October	194	192	386
November	130	127	257
December	136	177	313
	3264	3435	6699

By order of the Board of Health,

WM. A. MARTIN, *Clerk.*

Health Office, Philadelphia, Jan. 1, 1833.

Remarks on the above by G. Emerson, M. D.—The bill of mortality for the year 1832 will be found to differ considerably from those of former years. In the first place it has been improved in form, by the addition of four new columns, designating for each disease which has proved the source of mortality, the respective amount of males and females, with the numbers under and beyond the age of puberty. This alteration is a valuable desideratum, since with the former arrangement, in which the distinction was made in the whole mortality, it was impossible for one who had not access to the original register, to ascertain the particular proportion of the sexes and ages dying of any one disease. The investigator of medical statistics will be saved much time and trouble by these new designations.

The most important difference is, however, in the increase of the general mortality, which exceeds that of the preceding year, (1831,) to the amount of 1760. The largest proportion of this excess is to be attributed to the visitation of malignant cholera. The precise amount of the deaths, specified as from this disease, is 948. Of this number it appears that 563 were males, and 385 females, and that only 74 males and 50 females were under the age of 21; leaving the excess of adults 824, out of the total number of 948.

We have on a former occasion stated the population, included within the limits of the Philadelphia bill of mortality, at the late census in 1830, to be 167,811. Supposing the increase since at the rate of 3½ per cent. per annum, the amount in 1832 would be 188,367, which would make the proportional mortality for the year from all sources, about 1 in 29.3 inhabitants. Deducting the deaths from malignant cholera, the annual proportional mortality would be 1 in 34.3. The proportion from malignant cholera alone is about 1 to every 200 inhabitants. In these computations the still-born are excluded, and no distinction made as to colour.

When, however, the mortality of the blacks is separately considered, we find the proportion about 1 in 21.8 of their population. In the preceding year it was only 1 in 31.7, an unusual small proportion for this class.

By taking the mortality reported from the forms of bowel complaints, ordinarily designated under the heads cholera morbus, diarrhœa, and dysentery, the account of 1832 would stand thus compared with that of 1831.

1831.	
Cholera morbus and Infantum	320
Diarrhœa	81
Dysentery	121
Total	522

1832.	
Cholera morbus	73
Cholera infantum	366
Diarrhœa	172
Dysentery	78
Total	689
Total in 1831	522
Excess in 1832	167

The amount thus reported in 1832, under the ordinary heads of bowel complaints, compared with the whole mortality, (that from malignant cholera excepted,) is about 1 in 8, being nearly the same as usual, and even less than it has been in some years, as for instance in 1823, during the prevalence of the febrile epidemic, when the proportional mortality from bowel affections was 1 in 7.7 of the general mortality.

This is a strong evidence of the accuracy with which the ordinary bowel complaints were designated from the malignant form. Another evidence, we think, is furnished by the fact that only a small proportion of the deaths reported under the ordinary heads, of bowel affections occurred in adults, among whom malignant cholera was so particularly prevalent. The periods of life most subject to malignant cholera offers a most interesting subject for medical inquiry.

As the excess of mortality over that of the previous year is 1760, and the amount from malignant cholera only 948, it is evident that the other sources of mortality must have been increased. Accordingly, we find that of the 812 left after deducting from the total excess the mortality from malignant cholera, 719 were reported under the following heads in the given proportions, viz.—Apoplexy, 18; Bronchitis, 34; Consumption, 8; Convulsions, 65; Fevers, 177; Scarlet fever, 107; Inflammations, 143; Measles, 95; Unknown, 72.—Total, 719.

It is worthy of remark that the increase of febrile mortality is chiefly comprised under the head of typhus, the rest being generally below the number reported in the preceding year. The interments under the head of typhus fever have been increasing for the last three years. In 1830 they were about 1 in 77 of the whole mortality; in 1831 about 1 in 15, whilst in 1832 they amounted to about 1 in 28 of the general mortality.

As we view scarlatina and puerperal fevers as distinct from the ordinary forms of fever, we have not included them under the same head. It will be seen that scarlet fever has been unusually fatal during the year just past. The proportional mortality from scarlet fever has been increasing for several years past. Thus, in 1830, it amounted to about one per cent. of the whole mortality, whilst in 1831 it was 1 in 23, and during the past year, (1832,) amounted to about 1 in 18 of the mortality from all diseases.

There has been a striking increase in the mortality of measles during the same time.

The greatest mortality from the phlegmasia is recorded under the heads of inflammations of the lungs, breast, pleurisy, and bronchitis, all of which being situated in the same cavity, we have thrown together so as to exhibit the whole amount with the respective proportions reported of each, as compared with the same for the preceding year, viz.—

	1831.	1832.
Inflammation of the lungs	192	225
Do. of the breast	28	19
Pleurisy	24	19
Bronchitis	63	97
	307	360

From the very prevalent opinion, that during the existence of an epidemic all other diseases assume its type and fall into its train, it might be suspected that the excess of mortality from other diseases than malignant cholera, had chiefly occurred during the months previous to, and following its visitation. But an examination of the monthly mortality proves the reverse; namely, that during the months of July and August, in which malignant cholera prevailed, the mortality from other diseases was greatly increased beyond what it had been in the same months of the preceding year. Neither can this excess be mainly ascribed to other forms of bowel complaints, since much of it was owing to deaths from consumption, fevers, and inflammations.

The first case of malignant cholera was reported to the Board of Health on the 11th of July, the individual having been taken on the 5th, and died on the 8th. From this time to the 27th of the same month, only 6 or 7 cases were reported, on different days, but from the 27th the daily reports were uninterrupted till about the 8th of September. Of the whole mortality from malignant cholera, namely, 948, 852 took place between the 27th of July and 25th of August. The reports for each week the epidemic prevailed, were as follows, viz.—

			Adults.	Children.	Total.
2d week in July, ending the	14th,	malignant cholera	1	0	11
3d	21st		3	0	3
4th	28th		8	0	8
1st week in August, ending the	4th		81	3	84
2d	11th		335	35	370
3d	18th		238	44	282
4th	25th		67	49	116
5th	September 1st		41	4	45
1st week in September, ending the	8th		13	5	18
2d	15th		8	0	8
3d	22d		6	0	6
4th	29th		4	0	4
1st week in October, ending the	6th		2	1	3
Totals			807	141	948

The number of births reported falls short of that for 1831 by 89. The excess of male births is greater than usual, and amounts to no less than 415. We think that the visitation of the late epidemic has led to some omissions in the returns appertaining to this department, since it is not likely that it could have interfered with the conceptions which must have taken place so long before its approach was apprehended. Never since the births have been registered in Philadelphia has their amount been so nearly encroached upon by that of the deaths, as to leave the balance only 554 in their favour. Last year, (1831,) the difference between the births and interments, was 2,403.

Notice of a Malignant Disease generated on Ship-board by Filth, Imperfect Ventilation, &c. By John H. Griscom, M. D. [Communicated in a letter to J. K. Mitchell, M. D.]—In accordance with my promise made to you when we last met, I have taken some pains to inquire into the circumstances attending the awful mortality which prevailed on board the ship Sybilla, Captain Thornhill, during her passage from Holland to this port. The unparalleled destruction of human life in that vessel, was not, I am satisfied, caused by the scourge which has within the last few years devastated so many countries, but was a disease generated among these unfortunate wretches by their horribly filthy condition, and their total want of attention to their persons. From all that I can learn from the captain and consignees, there did not appear to be any positive symptoms of cholera, except intense *thirst*, and to allay this, they were continually calling for gin. Neither *cramps, vomiting*, nor *diarrhœa* attended these cases, nor indeed did there seem, from the accounts of these gentlemen, to be any febrile excitement, but in some cases, the captain states, they would be seen to shake, as with a rigor of intermittent, which would soon pass off, and leave them as before. The disgusting condition in which they kept themselves, swarming with vermin *cap à pie;* lying all day in their births without attempting to go on deck during the whole voyage; three or four huddling themselves together in a place destined to accommodate only one or two; totally inattentive to their own situation, and to the victims who were daily falling around them, whether kindred or not; this condition of things, I say, existed nearly two months prior to their being received on board the vessel. The passengers were from Wirtemberg, and for sixty days had been living in the canal boats which brought them down, not being allowed to leave the canal side, and were consequently obliged to drink the canal water, in which copper-bottomed vessels were floating, which is supposed to have been one powerful cause of the miserable diathesis to which they were reduced.

Considerable mortality had happened among them before embarkation, and the first death on board, occurred the day after their departure from the Helvoetsluys. Their food during the voyage consisted of peas, beans, potatoes and other fresh vegetables, fresh and salt meats, &c. all good and in abundance; they however ate but little, but all their desire was for gin and sugar, in which they would soak their bread, giving it even to their children of two years old. So perfectly listless and inattentive were they to their own situation, and so much a matter of indifference was it to them to be living or dying, that it was found necessary to make it the duty of the crew to go down every morning into the steerage, and after first searching out the corpses, and consigning them to their watery grave, to turn their attention to cleansing the living; to do which they were obliged to lift even the females from their beds of filth, and endeavour to relieve their bodies from some of the dirt with which they were covered, though without the least assistance from the poor wretches themselves. The whole number of them was one hundred and thirty-two, (seventy-four of them children,) of whom ninety-four perished during the voyage.

If there was any disease with which they were affected, and to which a name could be given, typhus would probably be the most appropriate. The officers and crew, who were fortunately not only willing, but indefatigable in their endeavours to keep these people in the best condition possible, spending two or three hours every morning among them, and this too during a protracted and stormy passage of ninety days, were in excellent health during the whole time.

On the Peruvian Bark as a Counter-agent to the Poisonous Effects of Arsenic. By Elias J. Marsh, M. D. [In a note to the Editor.]—Sir, The November No. of your Journal contains a communication from Dr. Perrine, detailing the effects produced on himself by swallowing accidently a large dose of arsenic.

How far the action of the poison may have been checked by the Peruvian bark, with which it was taken, is worthy of inquiry; and the object of this note is to communicate a statement just recalled to my memory, made several years ago by Professor J. A. Smith, of New York, to his class. Professor S. stated that a medical friend had related to him several cases of poisoning by arsenic, which he had successfully treated by administering large doses of Peruvian bark and milk.

Paterson, N. J. January, 1832.

Dr. Mott's case of Ligature of external Iliac Artery.—Dr. Vaché in a letter we have recently received from him, informs us that the patient in whom Dr. Mott tied the external iliac for the cure of diffused femoral aneurism, and an account of which was published in our 8th Volume, has done well and enjoys perfect health.

Transylvania University.—The number of students in the medical department of this University during the past session was 226. The number graduated at the commencement in April last, 69.

University of Pennsylvania.—The number of students in this institution during the session 1832–3 was 823; of which 368 were medical students.

Dunglison's New Dictionary of Medical Science and Literature.—We are happy to announce the appearance of this work. It comprises a copious vocabulary of technical terms, with their derivations, definitions, and French and German synonymes—biographical notices of the principal medical writers—and a list of the best works and authors on each subject. An index is given to the synonymes, by which it has the advantage of being a French and German, as well as an English Dictionary. To execute such a work requires great erudition, unwearied industry, and extensive research, and we know no one who could bring to the task higher qualifications of this description than Professor Dunglison.

Professor Ducatel's Introductory Lecture.—The subject of this lecture is the prejudice which we feel mortified to confess still prevails in the minds of some persons, that chemistry is merely an *ornamental* branch of the medical profession, an opinion which the professor has ably refuted. The lecture is creditable to its erudite author, and the school in which he holds a chair.

Haxhall's Prize Essay on Fistula Lachrymalis.—The Boylston prize was last year awarded to Robert W. Haxhall, M. D. of Richmond, Virginia, for his Essay on Fistula Lachrymalis. This essay, though it cannot lay any high claims to depth of research, or originality of views, displays considerable ingenuity, and is creditable to its author.

QUARTERLY
MEDICAL ADVERTISER.

IN consequence of the extended circulation of the American Journal of the Medical Sciences, the Proprietors intend, in compliance with the wishes of many of their Friends, to affix to each No. a Sheet of Advertisements. All Booksellers, Medical Gentlemen, and others desirous of taking advantage of this mode of announcement, will please address their Advertisements to Carey, Lea & Blanchard, Philadelphia, by the 10th day of the month preceding that of the publication of the Journal, viz. on 10th July, 10th October, 10th January, and 10th April.

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Philadelphia, January 20, 1830.

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Baltimore, May, 1832.

PHILADELPHIA VACCINE INSTITUTION,

Established in the year 1822, *with the approbation of Professors Physick, Chapman, Gibson, and Coxe; Doctors Hartshorne, Hewson, Monges, &c. &c. &c.*

The Subscribers to the above Institution, those Practitioners who have for the last fourteen years obtained their supplies of vaccine virus from the undersigned, and the profession generally throughout the United States, the British North American Provinces, and the West India Islands, are respectfully informed, that applications for vaccine virus will be attended to as usual, at all seasons of the year, and a one day's notice, by the undersigned.

JOSEPH G. NANCREDE, M. D.
S. E. corner of Walnut and Tenth streets.

Philadelphia, January 1st, 1833.

UNIVERSITY OF PENNSYLVANIA.

At a Public Commencement, held in the Hall of the Musical Fund Society, March 28th, 1833, *the Degree of Doctor of Medicine was conferred by the reverend Provost, W. H. De Lancey, D. D. on the following Gentlemen:—*

PENNSYLVANIA.	SUBJECT OF THESIS.
James Alexander M'Crea	*Solanum Dulcamara.*
Julien Henry	*Malignant Cholera.*
Walter Williamson	*Anatomy and Physiology of Teeth.*
Eugene H. Abadie	*Epilepsy.*
Robert B. Simpson	*Epilepsy.*
Benjamin D. Neill	*Reciprocal Influence of Mind and Body.*
George W. Evans	*Adhesive Inflammation.*
Samuel A. Whitaker	*Intermittent Fever.*
William S. King	*Rhus Radicans.*
Heister H. Muhlenberg	*Diseases of Lymphatic System.*
Charles Edward Hoffman	*Uterine Hæmorrhage.*
Joseph P. Fitler	*Pertussis.*
Charles B. Welch	*On the Functions and Diseases of the Liver.*
Napoleon B. Leidy	*Cynanche Tracheolis.*
William Honsel	*Dislocations of Os Humeri.*
Edward Peace	*Concussion of the Brain.*
Wilson M. Pile	*Malaria.*
Charles Martin	*Acute Hepatitis.*
George D. Bruce	*Scarlatina.*
Henry F. Leib	*Traumatic Hæmorrhage.*
Robert Watson	*Aneurism.*
Sydenham Walton	*Intermittent Fever.*
John Rhein	*Scarlatina.*
James Logan Fisher	*Dyspepsia.*
Samuel C. Bradshaw	*Intermittent Fever.*
John C. Jenkins	*Struma Africana.*
Thomas Murray	*Scarlatina.*
Robert H. Colhoun	*Opium.*
Joseph Spencer	*Cholera Infantum.*
Craig Huston	*Malignant Cholera.*
William B. Small	*Hydrothorax.*
Edwin C. Leedom	*Gout.*
Richard J. Harvey	*Syphilis.*
SOUTH CAROLINA.	
James Berney	*Pertussis.*
W. G. Ramsay	*Physiological Difference of the European and Negro.*
Alexander H. Reese	*Oleum Ricini.*
VIRGINIA.	
Alfred Taliaferro	*Angina Pectoris.*
William Ashby, Jr.	*Anthemis Cotula.*
James B. Southall, Jr.	*Dysentery.*
James L. Jones	*Peritonitis.*
Franklin Courtney	*Scarlatina.*
William N. Wellford	*Spinal Irritation.*
Sterling H. Tucker	*Intermittent Fever.*
Maurice Fitz Gibbon	*Action and Function of the Heart.*

James Hunter	*Hysteria.*
Anderson M. Newman	*Scarlet Fever.*
Benjamin F. Terry	*Hæmoptysis.*
John J. H. Straith	*Cynanche Trachealis.*
Henry M. Estill	*Constitutional Influence over Local Diseases.*
Peter Temple	*Bilious Remittent Fever.*
Edward J. Young	*Asthma.*
John H. Lochhead	*Cynanche Trachealis.*
Robert R. Wilson	*Traumatic Hæmorrhage.*
Churchill J. Thornton	*Scarlatina.*
James Johnson	*Variola.*
James W. Stewart	*Dislocation of the Shoulder Joint.*
John W. Langhorne	*Cold Water.*
William K. Trigg	*Scrofulous Ophthalmia.*
George E. Redwood	*Acute Gastritis.*
John T. Smith	*Bronchocele.*
Ethelbert A. Coleman	*Chronic Bronchitis.*
John Pitman	*Hydrocephalus Acutus.*
William R. Magruder	*Hæmoptysis.*
Henry G. Hunt	*Cowpox.*
Robert G. Jennings	*Scarlatina.*
Edward S. Neal	*Strictures of the Urethra.*
Littleton W. T. Land	*Cynanche Trachealis.*
William B. Smith	*Acute Hepatitis.*
Robinson N. Piemont	*Cholera Infantum.*
Samuel W. Ruff	*Advantages of Primary Amputation.*
George W. Cowdery	*Variola.*
Thomas J. Miller	*Dyspepsia.*
Richard Thomas Nalle	*Mercury.*
Thomas W. Baugh	*Gastritis.*
William Clarke	*Cynanche Trachealis.*
Abel F. Picot	*Infanticide.*
Willie Jones Eppes	*Inguinal Hernia.*
DISTRICT OF COLUMBIA.	
Alexander J. Wedderburn	*Malignant Cholera.*
Charles A. Hassler	*Tetanus.*
George R. Clarke	*Aneurism.*
Francis James Murphy	*Practical Application of Emetics.*
MISSISSIPPI.	
Walter Wade	*Death.*
GEORGIA.	
John E. Bacon	*On the Use of the Tampon as a Remedy in Uterine Hæmorrhage.*
James D. Rivers	*Intermittent Fever.*
Austin M. Walker	*Hernia Cerebri.*
Marcus Aurelius Franklin	*Sympathetic Nerve.*
George M. Newton	*De Utero Prolapso.*
Henry S. Wimberly	*Strictures of Urethra.*
TENNESSEE.	
Samuel Donelson	*Cholera Infantum.*
NEW JERSEY.	
Quinton Gibbon	*Epilepsy.*
Eli E. Bateman	*Dysmenorrhœa.*
William K. S. Duryee	*Scarlatina.*
Isaac S. Haines	*Cynanche Laryngea.*
Charles D. Hendry	*Mania a Potu.*
DELAWARE.	
Joseph P. Chandler	*Cynanche Trachealis.*

Isaac Henry Handy	*Cataract.*
Robert R. Porter	*Epidemic Cholera.*
KENTUCKY.	
Haden Leavel	*Tartrate of Antimony and Potash.*
Nicholas T. B. Marshall	*Irritability.*
LOUISIANA.	
Edward Duffel, Jr.	*Fistulo in Ano.*
John Casson	*Malaria.*
MARYLAND.	
Allen B. Brashear	*Peritonitis.*
William Tyler	———
CONNECTICUT.	
Isaac G. Posten	*Influence of Cutaneous Derangement.*
Alfred E. Perkins	*Epidemic Typhus.*
ALABAMA.	
Benjamin B. Beall	*On the External Tegumentary Tissue.*
Charles H. Patton	*Lateral Curvature of the Spine.*
NEW YORK.	
Nicholas Marselis	*Cholera Spasmodica.*
Erastus B. Burroughs	*Dysentery.*
NORTH CAROLINA.	
Samuel J. Wheeler	*Capsicum Annuum.*
John M'Neill Stewart	*Rubeola.*
William D. Barnes	*Pathology of Fever.*
MAINE.	
Samuel L. Clark	*Neuralgia.*
RHODE ISLAND.	
John E. Wheeden	*Pathology of Fever.*

At the preceding Commencement, held July 31, 1832, the following Gentlemen graduated, to wit:—Joseph B. Ard of Pennsylvania, as Honorary Doctor of Medicine, and Robert Foster of Pennsylvania, as Doctor of Medicine, his essay being on *Icterus.*

TOTAL, 116.

W. E. HORNER, *Dean.*

UNIVERSITY OF MARYLAND.

At the Annual Commencement of the Medical Department of the University of Maryland, held on the 23d of April, the Degree of Doctor of Medicine was conferred on the following Gentlemen:—

MARYLAND.	SUBJECT OF THESIS.
John Lee Webster	*Delirium Tremens.*
Michael N. Diffenderffer	*Hepatitis.*
Stephen H. Weems	*Phrenitis.*
William H. Morgan	*Cholera Asphyxia.*
Dennis Murphey	*Yellow Fever.*
Edward R. Magruder	*Mercury.*
Grafton Tyler	*Phthisis Pulmonalis.*
Hanson Dorsey	*Mania.*
William H. Worthington	*The Causes of Sudden Death.*

Henry A. Inloes	*De Ictero.*
George Maris	*De Obstetriciis.*
Samuel B. Creighton	*Yellow Fever.*
William H. Davis	*Physiological Action of Poisoning.*
William B. Lecompte	*Hæmoptysis.*
John W. Greetham	*Vision.*
Richard B. Burgess	*Bilious Fever.*
Otho J. Smith	*Chlorosis.*
William Manning	*Dislocations of the Thumb.*
John T. Archer	*Gout.*
William H. Smith	*Delirium Tremens.*
Robert Pue	*Warm Bath.*
William L. M'Manus	*Pathology of Inflammation.*
Lycurgus E. Griffith	*Preparations of Antimony.*
Isaac B. Owens	*Epidemic Cholera.*
Gustavus E. Wampler	*Injuries of the Head.*
Perry S. Kinnamon	*Spasmodic Cholera.*
William H. D. Hall	*Scrofula.*
Walter B. Williams	*Pneumonia Bilioso.*
James Maynard	*De Generis Humani Varietat.*
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Philip Bredá	*Sur la Formation des Ideés.*

E. GEDDINGS, M. D.
Dean of the Medical Faculty.

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* This gentleman received the Medal for the best Latin thesis.

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This Journal is devoted to the objects of Pharmaceutic research, viz. Chemistry, (General and Pharmaceutic,) Materia Medica, Zoology, Botany, Mineralogy, &c. Intended for the benefit of the Apothecary, it merits his patronage and support.

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THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

No. XXIV.—August, 1833.

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TO READERS AND CORRESPONDENTS.

Communications have been received from Professor WARREN, Drs. MORTON, GERHARD, ROBERTSON, and PANCOAST.

Drs. FITZ GIBBONS and MONETT's communications have been unavoidably postposed.

We have received the following works:—

Pathological Anatomy. Illustrations of the Elementary Forms of Disease. By ROBERT CARSWELL, M. D. Professor of Pathological Anatomy in the University of London, &c. &c. Fasciculus first, Tubercle. London, Longman & Co. 1833.

Letters on the Cholera Morbus. Containing ample evidence that this disease, under whatever name known, cannot be transmitted from the persons of those labouring under it to other individuals by contact—through the medium of inanimate substances—or through the medium of the atmosphere; and that all restrictions by cordons and quarantine regulations are, as far as regards this disease, not merely useless, but highly injurious to the community. By Dr. GILLKREST, Deputy Inspector General of Army Hospitals. London, 1831. (From the author through Dr. ASHBEL SMITH.)

Essay on Yellow Fever. By Dr. GILLKREST. (From the author through Dr. ASHBEL SMITH.)

Phrenology, in Connexion with the Study of Physiognomy. By J. G. SPURZHEIM, M. D. with thirty-five plates. To which is prefixed a biography of the author by NAHUM CAPEN. Boston, Marsh, Capen & Lyon, 1833. (From the publishers.)

A Memoir upon Staphyloraphy. By ALEXANDER E. HOSACK, M. D. one of the Surgeons of the Marine Hospital, New York. New York, 1833. (From the author.)

The substance of the Official Medical Reports upon the Epidemic called Cholera, which prevailed among the poor at Dantzick, between the end of May and the first part of September, 1831, as transmitted to their Lordships; being an Analysis of the said Epidemic Disease in that City, founded upon actual Observation and accurate Inquiry; with important and well-authenticated Facts relative to the same disease, as it prevailed among the poor in other parts of the north of Europe. By JOHN HAMETT, M. D. London, 1832. (From the author, through Dr. ASHBEL SMITH, of North Carolina.)

A Lecture delivered to the Medical Class of the University of Virginia, at the conclusion of the Course, and on the occasion of his leaving the Institution. By ROBLEY DUNGLISON, M. D. Professor of Physiology, Pathology, Obstetrics, and Medical Jurisprudence in the University of Virginia. July 9th, 1833. Published by the Class. Charlottesville, 1833. (From the author,)

The Philosophy of Medicine, deduced from a Series of Self-evident Propositions, developing Self-evident Principles for illustrating the Medical Sciences to Intuitive Demonstration. By EZEKIEL WEBB, M. D. of Mobile, Alabama. Philadelphia, 1833. (From the author.)

A Lecture on some of the Diseases of a Literary Life. Delivered before the American Institute, August 23d, 1832. By GEORGE HAYWARD, M. D. Boston, 1833. (From the author.)

Method of using the Chloride of Soda, either for Dressing ill-conditioned Sores, or as a Means of Purifying unhealthy Places, and of Disinfecting Animal Substances. By A. G. LABARRAQUE, Chev. Leg. of Honour, &c. Translated by JACOB PORTER. Second edition. Northampton, 1833. (From the Translator.)

Proceedings of the President and Fellows of the Connecticut Medical Society, in Convention, May, 1833. New Haven, 1833. (From the society.)

A Practical Treatise on the Diseases of the Eye. By WILLIAM MACKENZIE, Lecturer on the Eye in the University of Glasgow, and one of the Surgeons of the Glasgow Eye Infirmary. Boston, 1833. Carter, Hendee & Co. (From the publishers.)

Pétition Adressée a la Chambre des Députés. Par N. CHERVIN, Membre Titulaire de l'Académie Royale de Médecine, à l'effet d'obtenir que les résultats de l'enquête officielle que le Gouvernement a fait faire aux Etats-Unis d'Amérique, sur la conduite de ce médecin, sur son caractère moral et sur la question de la contagion ou de la non-contagion de la fièvre jaune, soient publiés aux frais de l'administration, ainsi que les lettres ministérielles qui ont provoqué cette enquête; et surtout pour appeler l'attention de la Chambre sur la nécéssité d'une prompte réforme dans notre système et notre législation sanitaires; Suivie des Pièces a L'appui, et du Rapport fait a la Chambre, par M. DE MONTEPIN. Paris, 1833. (From the author, through Dr. LA ROCHE.)

Journal Universel et Hebdomadaire. Tom. X. Nos. 123 to 126. (In exchange.)

Annales de la Médecine Physiologique. October, 1832. (In exchange.)

Revue Médicale. December, 1832. (In exchange.)

Archives Générales. December, 1832. (In exchange.)

Wissenschaftliche Annalen der Gesammten Heilkunde. Herausgegeben von Dr. J. F. C. HECKER, Professor der Heilkunde an der Friedrich-Wilhelms-Universität zu Berlin. February, 1833. (In exchange.)

London Medical and Surgical Journal, for March, April, and May, 1833. (In exchange.)

London Medical and Physical Journal, for March, April, and May, 1833. (In exchange.)

The Edinburgh Medical and Surgical Journal, for April, 1833. (In exchange.)

The Medico-Chirurgical Review, for April, 1833. (In exchange.)

The London Medical Gazette, for March, April, and May, 1833. (In exchange.)

The Western Journal of the Medical and Physical Sciences, for April, 1833. (In exchange.)

The Western Medical Gazette. Vol. I. Nos. 10, 11. (In exchange.)

The Boston Medical Magazine. No. 11. (In exchange.)

For the gratification of our contributors we present references to the works received during the last three months, in which their communications are noticed.

Professor Mott will find his Case of Extirpation of the Parotid noticed in the Archives Générales for November, 1832, in the Transylvania Journal for July, 1832, in the London Medical Gazette for January, 1833, and in the Lancet for February, 1833.

Professor Sewall's Case of Diseased Spine is copied into the Gazette Medicale for December, 1832.

Professor Horner's Case of Ligature of common Carotid in a case of attempted Suicide, is copied into the Boston Medical and Surgical Journal for December 12th, 1832, and in the London Medical Gazette for 16th March, 1833. His Case of Ozena cured by Chloride of Lime is noticed in the Western Journal of Medical and Physical Sciences.

Dr. Wells' Cases are noticed in the Transylvania Journal for July, 1832, in the London Medical Gazette for January and February, 1833, in Lancet for February, 1833, and in the London Medical and Physical Journal for March, 1833.

Dr. Atlee's Paper on the Use of Prussic Acid in Pertussis, is copied in Gazette Médicale for January, 1833, and in the London Medical and Physical Journal for March, 1833.

Dr. Hodge's Paper on Sedation, is noticed in the Transylvania Journal for July, 1832.

Dr. Mitchell's Experiments on Arsenic are noticed in the Transylvania Journal for July 1832, and his case of Spasm relieved by Ligature, is copied into the London Medical and Physical Journal for April, 1833.

Dr. Picton's Remarks on the Exclusion of Light for preventing Pitting in Variola, are noticed in the London Medical Gazette for January, 1833, in the Lancet for December, 1832, in the Gazette Médicale for February, 1833, and in the Archives Générales for November, 1832.

Dr. Young's Paper on the Use of Cimicifuga Racemosa in Chorea, is copied into the Gazette Médicale for December, 1832, and into the Archives Générales for November, 1832.

Dr. Williams' Remarks on Malt Poultice, are noticed in the London Medical and Physical Journal for March, 1833.

Dr. Hall's Case of Ligature of External Iliac, is noticed in the London Medical and Surgical Journal for February, and the London Medical and Physical Journal for May, 1833.

Dr. Pitcher's Case of Wound in the Abdomen, is noticed in the Transylvania Journal for July, 1832.

Dr. Turnbull's Case of Spinal Irritation, is noticed in the Boston Medical and Surgical Journal for January, 1833.

Dr. **Hildreth**'s case of dropsy, is copied into the Boston Medical and Surgical Journal.

Dr. **Barton**'s Cases Illustrative of the Physiological Practice in the Diseases of Louisiana, are copied into the Transylvania Journal for January, 1833.

Dr. **Perrine**'s Case in which a Large dose of Arsenic was taken, is noticed in the London Medical Gazette for March, 1833, and in the Transylvania Journal for January, 1833.

Dr. **Le Beau**'s Case of Premature Puberty, is noticed in the Lancet for March, 1833, in the Transylvania Journal for January, 1833, and in the Gazette Medicale for 1832.

Dr. **Skinner**'s Case of Cholera Infantum cured by Nitrate of Silver, is copied in the Transylvania Journal for July, 1833.

Dr. **Munsel**'s Remarks on Galvanism, are copied in the London Lancet for March, 1833.

Dr. **Eickhorn**'s Case in which a Large Dose of Camphor was taken, is noticed in the London Medical Gazette for March, and the London Medical and Surgical Journal for May, 1833.

Dr. **Ward**'s Case of Vagitus Uterinus, is copied in the London Medical and Surgical Journal, for May last.

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication, should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "Carey, Lea & Blanchard, Philadelphia, for the Editor of the American Journal of the Medical Sciences."

All letters on the *business* of the Journal to be addressed exclusively to the publishers.

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XIV. The Substance of the Official Medical Reports upon the Epidemic called Cholera, which prevailed among the poor at Dantzick, between the end of May and the first part of September, 1831, as transmitted to their Lordships, (of the Privy Council,) being an Analysis of the said Epidemic Disease in that City, founded upon actual Observation and accurate Inquiry, &c. By John Hamett, M. D. London, 1832. pp. 189 457

XV. An Essay on Epidemics as they appeared in Duchess county, from 1809 to 1825; also a Paper on Diseases of the Jaw Bones, with an Appendix, containing an Account of the Epidemic Cholera, as it appeared in 1832. By Hunter Sherrill, M. D. New York, 1832. pp. 184 & 38. 8vo. 463

XVI. The Anatomy and Physiology of the Organ of Hearing, &c. By David Tod, Member of the Royal College of Surgeons. Octavo. pp. 147. London, 1832 - - - - - - - - - - - - - - 468

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THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

Art. I. *Lecture on Cholera Morbus.* By N. Chapman, M. D. Professor of the Institutes and Practice of Physic and Clinical Practice in the University of Pennsylvania.

THE ensuing article I am induced to submit to the press, to show the close analogy of our own indigenous cholera, in its more violent character, to the late epidemic form of the disease. On the irruption of this horrible pestilence, and the same opinion seems still to be held by many, it was deemed to be entirely a new disease, peculiar and distinctive in its nature, its symptoms, and treatment. Excepting some slight modifications, always impressed on disease by an epidemic influence, I think it will appear, that they are essentially the same in these respects, and perhaps, by this publication, I may serve in a degree, to correct an erroneous view hastily adopted, and now too commonly entertained. The article is a lecture which I have delivered every season for the last twenty years, as a part of a course on the practice of physic, and now present it with the alterations or additions only, which I have taken care to designate. That such is the fact, I appeal to those of my class, who have notes of the lecture, and also to the recollection of Drs. Mifflin and Martin, who were attached to the cholera hospital under my charge, to whom it was read on the first breaking out of the epidemic cholera in this city. Could I with fidelity to my pledge, have revised the lecture, it might easily have been improved, as well in the style, as some of its doctrines, which latter in several particulars, I have been led to change, by more am-

No. XXIV.—August, 1833.

ple observations derived from the position I occupied during the visitation of malignant cholera among us. The next number of this Journal will contain a communication from me on that disease.

Cholera Morbus.

This disease has been as inelegantly as inappropriately named, the term cholera morbus being formed from a mixture of the Greek and Latin languages—χολὴ, bile, and ῥέω, to *flow*, and *morbus* disease, meaning strictly a bile flux. It will hereafter be seen, that an excess of bile is a very rare incident of the affection, never occurring in its severer forms, and that the discharge, whatever it may be, must be deemed merely a symptom of a pathological condition, of which this appellation is very inaptly expressive. Correctly, I think, it may be derived, as indeed it was by TRALLIAN, from the Greek χολὰς and ρεω, indicating that the discharge is excerned from the intestines, rather than secreted by the liver. Thus deduced, a designation at least might be formed more justly significant, of one of the most characteristic features of the disease. But objectionable as the received title is, I am afraid it is too firmly fixed by usage now to be changed, and I shall be compelled to retain it.

Cholera morbus appears to have been recognised by our most ancient writers. There are frequent allusions to it by HIPPOCRATES and GALEN, and it is fully and faithfully described by CŒLIUS AURELIANUS, PAULUS ÆGINETA, and especially by ARETÆUS.

No disease varies more in degree of violence than the one now under review. An attack of it usually comes on suddenly, or with little or no premonition. The earliest affections in most instances, perhaps, are soreness, and distention more or less over the whole abdomen, though particularly felt at the epigastrium, with a sense of fulness, tensive uneasiness and oppression in that position, attended by borborygmus and a twisting colicky pain about the umbilicus—then ejections of the ordinary contents of the stomach, mixed with a thin watery fluid, or ropy mucus, occasionally tinged by bile, or more probably, by some morbid secretion of the primæ viæ supposed to be bile, of different hues, accompanied by cramps of the abdominal muscles, as well as those of the limbs, especially of the calf of the leg—and there is at the same time pain in the back, which I have seen to be excruciating. The vomiting is soon followed by copious discharges from the bowels, at first of a thin fluid in which fæcal matter is dissolved, and afterwards the evacuations each way are essentially of the same character and aspect.

Contradictory as it may be to a common opinion, I do not believe, except in very slight attacks, that bile is ever evacuated, or only in the very beginning, prior to the establishment of the case, or subsequently, when convalescence is about to take place. The accounts to the contrary are by writers who have delineated the disease as it usually prevails in the temperate climates of Europe, probably in the mildest character of which it is susceptible.

During the intervals of vomiting, nausea is most harassing, the thirst intense, with an indescribable wretchedness about the epigastric and precordial regions. As the case proceeds so do the evacuations upwards and downwards more frequently recur, and the cramps and spasms are correspondently exasperated, in some instances reaching to so tremendous a height, that I have seen the trunk rendered rigid, the fingers so clenched as not easily to be relaxed, and the extremities otherwise variously distorted, constituting on the whole a tetanoid condition. Great weakness, with a feeling of exhaustion from emptiness, is complained of in the interval of the paroxysms—and occasionally confusion of head, noises in the ears, or partial deafness are experienced.

The pulse, which had been throughout feeble, henceforward becomes still more so, and with an increased depression of general strength, there are, an exceedingly cold, damp, collapsed surface, more especially of the extremities—a haggard countenance—burning in the stomach or at the umbilicus—eager desire for cold drinks—the tongue however moist, white or milky—the pukings and purgings even more frequent and copious, consisting of a fluid resembling greasy or dirty water, sometimes darker, and floculose like coffee-grounds, or the settlings of port wine—with scanty or suppressed urinary secretion.

This condition cannot endure long, and hereafter there is a rapid sinking manifested by some remission of the preceding affections, with a nearer approach to exhaustion—the pulse tremulous, thready, or hardly perceptible—still, however, extreme jactitation continues—sometimes there is muttering delirium, or with a full retention of the senses—a low, stammering, sepulchral voice—the skin dewy and of a corpsy coldness—lividness of countenance, and of the fingers, the nails particularly—impeded, anxious respiration—singultus—sunken eyes—hollow cheeks—purple or pallid shrivelled lips, &c. &c.*

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* This account corresponds in so many of its features with that given of the recent malignant cholera, that it might be supposed to be copied from it. But it was written long before I had any knowledge of that epidemic, and is a delineation of our own indigenous disease as I have seen it myself. There is not a symptom mentioned, which may not be found in the descriptions of cholera by the olden authorities, of which a very excellent digest is contained in James' Medical Dictionary. The violence of the cramps and spasms, the contractions

It is not to be supposed, from the foregoing narrative, that cholera always exhibits so frightful an aspect. Like other diseases, it has, as previously intimated, its gradations, and I have described one of its most violent forms, though even such is so frequent in our climate, either originally, or made so by neglect, or ill management, that I deemed it proper to direct attention to it.

In its more ordinary presentations, it comes on with sickness of stomach, flatulence, some of the symptoms of colic, then pukings mostly of indigested aliment, sometimes with bile, though more commonly without it, soon followed by purgings, of some watery fluid, which is also vomited—cold, damp skin—weak pulse—cramps always of some portion of the alimentary tube, and occasionally of the external muscles. Even this comparatively mild case, may however, when badly treated, speedily degenerate into a state as alarming as the graver form of the disease which I have described.

Cholera is incident chiefly to close, sultry, autumnal weather, occurring however sporadically, at all seasons, and in every climate. To certain positions it would seem endemial from its common prevalence, sometimes in our foggy marshy districts, though more especially to portions of the Indian Peninsula, where it almost constantly exists to a considerable extent, denominated by the French settlers in that section of country, *mort de chien.*

Breaking out under such circumstances, it seems probable, that it is caused like bilious colic, and the other nearly allied affections, by the influence of paludal exhalations. The effluvia of putrid animal matter are very apt to excite it when concentrated. It has often been induced in persons concerned in the opening of graves, particularly in extensive exhumations—more rarely in those engaged in dissections: we see it occasionally around charnel houses, and similar sources of stench, and it is said to have prevailed in the vicinage of fields of battle, where the dead were left to rot and putrefy.

More generally, however, it may be traced to the sensible qualities of weather, cold or moisture succeeding to heat or dryness, or to an exposure to the sun, or to a draft of air, or to the dampness or coldness of the night, or to sleeping with windows open, or to wearing thin apparel, or entering cellars or similar places, or to whatever,

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of the fingers, the tetanoid condition of the body, the lividness of countenance, and of the lips and nails, the cold collapsed surface, the thin aqueous discharges, sometimes resembling the washings of flesh, or of a dark floculose fluid, the haggard emaciated countenance, the altered voice, the embarrassed respiration, the unquenchable thirst, the burning sensations in the stomach, the anxiety and jactitation, are all distinctly noticed.

indeed, checks perspiration. It is also excited by irritating or otherwise offensive ingesta, particularly by crude, unripe fruits, or raw or imperfectly cooked vegetables, or gross animal food—and above all, by the several kinds of shell-fish, especially if tainted by being kept too long—and is very frequently brought on by a debauch either in eating or drinking—sometimes by poisonous matters, the preparations of copper, arsenic, and such like articles—also by harsh emetics or purgatives, inducing hyperemesis, and hypercatharsis, and even by excessive fatigue.

Exasperated passion has moreover induced it, as well as some other mental emotions or perturbations, as the agitations of grief or terror—of the latter of which I once saw an instance in a lady, from the alarm of a supposed burglary at night. Cases, however, of this nature, are comparatively rare, and, perhaps, would not take place at all, were there not a considerable degree of predisposition at the moment.

Cholera may be so pervading as to become an epidemic, and I have known it to be so partially in this city, either preceding or attending autumnal malignant diseases. It was one of the forms of yellow fever, and I met with many instances of it during the late prevalence of pernicious intermittents among us. The same tendency in it is noticed by SYDENHAM and other writers to an epidemic prevalence. But in 1817 it broke out in India, with a violence and universality of pervadence wholly unexampled, sweeping over immense regions, and destroying annually more than a million of people, as appears from the official reports on the subject, and has not yet ceased—the aggregate of the mortality having already amounted, according to different estimates, from twenty to fifty millions.

[Like the deluge of old, there seems indeed to be no barrier to its progress. Continuing its fell career, from its original position, we have recent intelligence of its having overleaped the mountains of Caucasus,—is now spreading its devastations through the adjacent provinces of Russia, and it is most seriously to be apprehended, that it may diffuse itself throughout Europe. What is to be our fate in regard to it, no one can safely predict. Conformably to the laws of such epidemics, it is not improbable that it may be extended to us, and even still further, so as ultimately the whole world shall be embraced in this calamity. Not more than merely to allude to the narrow boundary which separates, at one point, our continent from that of Europe, the wide ocean itself, that interposes between us, in other parts, may not arrest it. Epidemics not at all dependent for their propagation on contagion, readily transmissible in other modes, have in many instances, proved common to these, and other remote sections of the globe.

This is a fact which having attracted very little attention, is not generally known. Ever since I have been connected with the profession, we have had a succession of very striking evidence in confirmation of it, and there is much reason to suppose that antecedently it was not otherwise. The yellow fever, the first of such occurrences in my time, prevailed here, and in the peninsula of Europe simultaneously. It had only begun to decline when there broke out an influenza of the most fatal character in France, that travelled over Europe and this country. This was followed, after a few years, by an equally pervading typhoid fever of both regions, called by us spotted fever. It had hardly disappeared, when malignant or pernicious intermittents, and their kindred affections arose, and alike traversed the old and new continent. Contemporaneously, we each had in an equal degree, the variolous disease in its diverse modifications—the former, or intermittents, in warm, and the latter in cold weather. Lastly, they have abroad already the scourge of epidemic cholera, and prudence dictates from this review, that we should be prepared to receive its visitation.]*

As usually happens in regard to new diseases, this epidemic cholera is ascribed in its origin to different causes, as contagion, spoiled rice, marsh miasmata, and other ordinary agencies, utterly inadequate to account for it. The only true explanation is to be sought in an epidemic influence, of the precise nature of which, however, we know nothing with certainty.

Common cholera, though resembling several of the other disorders of the alimentary canal, is still somewhat peculiar, and need not be confounded with these. It may be distinguished from colic, among other respects, by the absence of constipation—and it differs from diarrhœa and dysentery by more severity of spasm, and by the evacuations being peculiar, and for the most part, unmixed with any bilious or bloody matters.

To decide on the issue of a case, is perhaps at all times not easy. Examples of recovery are frequent, in a state, apparently desperate, and of death suddenly taking place when least to be expected. Yet it may be concluded, that the danger is imminent, where the disease continuing, there is extreme reduction of the pulse, with general prostration of strength, short, hurried respiration, coldness of surface, clammy sweats, lividness of the lips or fingers, tumid abdomen, watery, greasy, and especially dark floculose discharges, suppression of urine, hiccup, distressed haggard countenance, and delirium. Even in this condition, with the ill-boding Hippocratic countenance added, I have known the patient to get well.

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* The above remarks, included within brackets, were introduced into the lecture during the winter session of 1831–2.

To entitle us to a favourable prediction, there must be with the subsidence of the cramps of the muscles, and of the turbulent state of the alimentary canal, bilious evacuations, a rising of the pulse, a restoration of temperature, with some genial moisture of the surface, and sweet, undisturbed sleep, to which there is generally a strong tendency in the incipiency of convalescence. Cholera, however, under most circumstances, is a very alarming disease, exacting the greatest vigilance and attention.

In violent attacks of it, we meet with on dissection, the stomach and bowels either exceedingly relaxed, flaccid and pale, or the latter contracted by spasm, or variously convoluted or twisted—sometimes, however, with considerable turgescency of the vessels or phlogosis at certain points, and very often congestion of the liver, and more or less in the abdominal viscera generally. Engorgement of the lungs is not so common—sometimes however to an extent resembling the apoplectic condition of these organs. The brain is also found engorged, and inflamed with occasionally extravasations. Of the state of the spinal marrow I cannot speak, never having examined it, or seen any reports regarding it. But I should presume it to be affected very much as is the brain. The most interesting appearance, perhaps, is that each side of the heart, though especially the right side, contains thick, viscid, black blood, the right loaded with it, pervading indeed in a degree the whole circulation, in every organ and part of the system.

During life, the blood which may be drawn away is often similar, or of a dark, heavy, venous appearance.*

The earliest notion regarding the pathology of this disease, and which indeed seems at present to be entertained by many, was, that it consists only in an excess of biliary secretions. Cholera, which means a flow of bile, is sufficiently expressive of this view. Granting the alleged incontinence of bilious discharge, which, however, cannot be done, it must surely be considered only an effect of some pre-existent hepatic irritation. An allusion has been made to the analogy between this, and some other disturbances of the alimentary tube, and especially bilious colic. The pathology of these two diseases has so much in common, that content with referring generally to what was said of the nature of the latter affection, I have little further to remark. Cholera, though simple in its origin, ultimately becomes a case of considerable complication, arising in the stomach, and thence by a play of sympathies, entangling other parts of the system in disordered action to a wide extent. It is on the central digestive organ that the primary irritation is felt, which spreads ordinarily to the bowels, to the liver, and to the brain, &c. To this conclusion I am led, by the recollection of the causes of the disease, which are impressions on the cutaneous surface, from the variations of weather, speedily transferred to the stomach—or some morbid impingement directly on that viscus by miasmata, by very offensive ingesta, or by intemperance and debauchery. It may be further added, in corroboration of the same view, that the first ejections by vomiting consist merely of the contents of the stomach, or variously coloured mucus, or more watery fluids, and that bile is not thrown up, before the biliary organs are secondarily affected, and not even then, unless the attack is very slight. Being once placed in this state, and only under the circumstances just noticed, the liver is then stimulated to increased efforts, and we have as an effect, the bilious discharges incident sometimes to the case. But in a short time, the energies of the stomach, by which tone and support are afforded to every part of the chylopoïetic system, give way from the peculiar distress which that viscus suffers. The liver, so immediately dependent on it, sharing in this indirect debility, is unable to return the blood which rushes into it, and engorgement of the portal circulation takes place, distinguished by the ordinary symptoms of that condition, and especially the suspension of the hepatic secretory office.

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* To the dissections of my late friend, Dr. Lawrence, I am mainly indebted for the anatomical characters of cholera. Little is recorded on the subject prior to the occurrence of the epidemic form of the disease. His examinations were confined principally, though not exclusively, to the cases of cholera occasionally presented during the prevalence some years ago, of malignant intermittent fever in this neighbourhood, and which were undoubtedly a modification of that disease.

That such is a correct estimate of the pathology of simple cholera seems to be confirmed by the history of the causes of the disease, its symptoms, the phenomena on dissection, and we shall presently see, the method of cure. Conclusive, however, on this point, is the fact, that the disease may at any time, be imitated by certain exasperations of the stomach. Give calomel, tartarized antimony, and gamboge, in large portions, and an artificial cholera morbus is commonly the result. This very prescription was formerly used in this city to effect copious evacuations, upwards and downwards, in the treatment of what were then called bilious fevers. Even a more striking illustration is supplied in the instance of certain poisons acting on the stomach, where indeed the phenomena are so similar to those of genuine cholera, as sometimes not to be discriminated, as we see in the history of legal proceedings, the ablest medical men not being willing to decide merely from a contemplation of the external physiognomy of the case. As the disease proceeds, however, the gastric irritation being more extensively spread, embracing the entire primæ viæ, there is of course more concentration of blood in the deep-seated vessels, derived at the expense of those of the periphery of the body, and in consequence, a greater degree of inward congestion, and general prostration of power.

Much has been imputed to the peculiar condition of the blood in cholera, which, as is alleged, from its imperfect decarbonization, being rendered unfit to sustain the brain, cerebral energy is impaired, and hence all the actions dependent on it become enfeebled. But whatever may be the influence of such blood, it seems to me quite certain that the change it undergoes is secondary, and that it, and every other link in the ultimate catinated series of events, constituting the disease in its maturity, are referable to the impressions on the stomach, and through it on the ganglionic nerves, and thence to the spinal marrow and brain.

It is only on such an hypothesis that some of the most prominent phenomena of the disease admit of an explanation. The early disturbance of the gastro-intestinal functions, the pain in the back, the violence of the spasms, the confusion of head, all go to show, that the whole nervous system is deeply implicated, and whatever subsequently happens, may readily be conceived to proceed from its derangement. As to the state of the mucous surface of the digestive tube, so immediately concerned in the disease, it is presumable, that it varies in different cases, as well as in the several stages of the same case. There is probably at first merely irritation of the exhalants, to which the copious serous discharges are referable. But subsequently inflammation may ensue, in a greater or less extent, though I should suspect, from the character of the discharges, very rarely of any part of the follicular or criptous structure.

Deducing our practice from the theory I have proposed, it would follow, that the only indication in the commencement to be consulted in the treatment, is the removal of the original gastric irritation. But it sometimes happens that a theory may be perfectly just, and still our practice cannot be a regular or immediate derivation from it. Though in ophthalmia, inflammation is the essence of the disease, previously to attempting its reduction, the irritant, if such exist in the eye, producing it, must be removed. Thus too, in dropsy of the cavities we are occasionally called upon to evacuate the oppressive effusion, in anticipation of the cure of the pathological condition of which, it is merely an effect. Exactly on the same principle are we compelled sometimes to proceed in cholera. Not a few of the cases of it are induced by such irritating contents of the stomach, that these acting as the immediate, or at all events the aggravating cause, the case will not yield without they are carried off. This is the state of the disease which I shall first consider.

Diluent drinks are here, and indeed under all other circumstances of cholera, very much prescribed. Tepid chamomile tea, or water, or barley water, or weak chicken tea, will sometimes answer in mild cases when copiously drank. This is an old plan of managing cholera morbus, espoused by Sydenham, and from him descended to the present times, and retained pretty much by the weight of his authority. Why the stomach should be deluged with such beverages, instead of being emptied at once by an emetic, I never could learn or comprehend. It is presumable, however, that the practice arose out of an assimilation of the case to that of poisons, a very predominant notion at one period, the fluid being deemed of a very acrimonious and virulent nature. Be this as it may, the effect of the emetic would unquestionably be more prompt and complete. Entertaining this conviction, I very early adopted such a course. Twenty grains of ipecacuanha I usually order, and that its operation be promoted by warm water. The stomach becomes now relieved of the causes of irritation, and sometimes completely tranquillized.

More is done by the emetic, in occasionally overcoming the spasms, and on its secondary and diffusive operation taking place, a centrifugal direction is given, whereby the irritation of the first passages, as well as the deep-seated congestion, are removed. On the restoration of the just balance in the circulation, and the functions dependent on it, the system before prostrate, now emerges from under the load, and we are presented with altogether a case more open and manageable.

Taking this principle to be correct, perhaps I have too narrowly circumscribed the application of emetics, to the disease induced by crapulency, or by other highly offended states of the stomach. My experience, I confess, is not sufficiently extensive under different circumstances, to speak so confidently of the propriety of the practice, though I have tried it successfully in several instances, and can discern, when duly regulated, no objection to such general extension of it.

Cases however of extreme prostration may occur, in which an emetic might be hazardous, or utterly inadmissible, though such in the beginning of an attack I have rarely or never witnessed.

Nor is it to be supposed that an emetic is always demanded. No offensive matters existing in the stomach, an appeal may be made in most instances without delay, to calm irritation, and subdue the spasmodic pain and turbulence. It is here that the course of treatment can be in strict conformity to the pathological view I have suggested. Combinations, into which opium enters largely, are the most approved remedies. The potash mixture with laudanum, the spirit of camphor, or camphorated emulsion with nitrous acid and laudanum, are greatly prescribed—and perhaps the acetate of lead and opium are deserving of confidence. Laudanum alone, or what answers better, opium, and particularly an old opium pill, I generally prefer, as less apt to be rejected. Calomel in large doses has sometimes answered under such circumstances.

But such may be the degree of gastric irritability, that none of these medicines will be retained, when a recurrence may be had to an anodyne enema. Could we indeed uniformly command an acquiescence in the practice, it were better at once to place the system in this way under an opiate impression, leaving the stomach to repose, or at least released from the annoyance of remedies. Numerous are the instances within my own experience, thus managed by a large anodyne injection at the very onset, which gave me very little further trouble. Defeated in this design, however, the endermic practice with morphia, offers a resource worthy of trial. Great advantage is sometimes attained by a sinapism over the epigastrium, or on each of the lower extremities in this exquisitely irritable state of the stomach, and still more, by an application of cups or leeches to the former position.

Evidence, however, existing of heavy congestion, venesection is to be employed. Let it be remembered, that the pulse in this case is not the only guide. Whatever may be its feebleness, when there is violent pain, and an ordinary degree of constitutional vigour, the lancet may generally be safely urged. This I have sometimes done, the pulse being exceedingly low, and have found it to rise by depletion. It may, I think, be laid down as a rule, without hardly an exception, that in the early stage of all diseases attended by *much pain*, if we find the pulse weak, it ought to be considered as depressed, which is most effectually removed by direct evacuations. Yet, admitting this to be true, we are, at the same time, in some of these cases, to proceed very circumspectly with the lancet. Either from the system refusing to reäct, or that the general circulation is so emptied by congestions in the great viscera, that blood suddenly and copiously lost would be productive of harm, and might probably extinguish life. We therefore draw it away slowly, watching its effects, and allow time for the vital or recuperative energies to be developed, and come again into play. Detractions of blood are to be deemed appropriate when the stream flows strongly, its colour gradually becoming more florid, and the pulse rising, and assuming greater tone and fulness. The reverse of these indications shows its impropriety, and constitutes an admonition to desist. In doubtful circumstances, where there is an imperfect reäction, it may be more prudent to substitute topical bleeding from some portion of the abdomen, or in preference from the spine, should we suspect irritation in that part, either by the expression of pain in it, or the existence of violent spasms. The loss of blood may, here, be preceded by sinapisms, and by the warm bath, which usually proves very beneficial in cholera, and is particularly suited to the case immediately before us. Not having it however at hand, the vapour bath may be substituted, or hot fomentations applied diffusively over the body with subsequent frictions by warm flannel, and on a favourable condition arising, then, should it seem to be required, venesection or local bleeding may be safely practised, and sometimes to a considerable extent.

Not arrested, the disease will soon reach a stage to demand a decidedly stimulating course of treatment. It is now, should prostration be alarming, that we must recur to sinapisms or blisters, and to apply dry heat, by hot sand bags, or some similar medium, or to rubefacient frictions.

As a vesicatory, the nitric acid is greatly extolled in this case. Two parts of the acid with one of water, are directed to be spread over the part with a feather, or the surface may be rubbed with the mixture, till some sharp pain is induced, when the acid is to be neutralized by a solution of salt of tartar. The cuticle can now be easily detached, and leaves the cutis raw, which may be continued in this state by dressings with some stimulating ointment. The pain of this application we are told is not greater than that from the fly blister, and much more speedily subsides. It is particularly recommended by *quickness* of action, the effect being attained in two or three minutes. May it not however, like a severe burn, completely destroy the vitality of the part, and thus prove useless or even mischievous?

In regard to internal remedies in this sinking or collapsed condition, those chiefly resorted to are of the class of diffusible stimulants. The liquor ammoniæ, a solution of camphor in ether, the spirit of turpentine, the tincture of capsicum, hot toddy, or what is better, *mint julep.* But while directing any of these articles, opium, which is our sheet anchor, ought to be continued, should it not be forbidden by cerebral disturbance.

Lately two new expedients have been suggested, more particularly with a view to the suspension of the vehement retchings, and attendant spasms, which seem to have some claims to attention. The first is an application of tourniquets to the arm and thigh of opposite sides. This I have tried and with decided advantage, so far as regards the suppression of the cramps of the muscles of the extremities. The second consists in fastening the patient down on a board in a horizontal position, with straps so that he cannot move. The abdominal muscles, and other auxiliary powers in vomiting, being thus suspended, then to administer laudanum and other remedies, which are represented always to be retained to the full effect intended.

As soon as the stomach becomes retentive of such articles, purgatives are usually required, and among which calomel, on several accounts, is to be preferred. Notwithstanding the common impression to the contrary, it is in a large dose of a less irritating tendency than perhaps any other, and is peculiarly calculated to emulge or unload congested organs. But when the case is of a milder character, castor oil, or any other laxative, will be adequate, and may be substituted. Evacuations having been procured, should the secretions seem to be deficient or vitiated, it will then be proper to recur to calomel in small doses alone, or with a modicum of opium, with a view to their promotion or rectification.

Of regimen in this disease little need be said. The stomach is in such a state as to preclude nourishment. But so great is the thirst that some drink must be provided. The thin vegetable mucilages are usually directed in the practice of this city. Cold lemonade, even icy cold, however, is far more grateful, and may be allowed. The late Professor Kuhn thought it so salutary, that he prescribed it liberally as a remedy. It should be made with boiling water, and then permitted to cool. There is no objection to cold water in small portions, or small pieces of ice itself held in the mouth as mentioned on a preceding occasion.* As soon as the stomach becomes retentive of food, the most appropriate is thin chicken water, or some similar article.

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* The allowance of cold drinks, and of ice in cholera, has been claimed as an innovation first introduced into the treatment of the recent epidemic form of the disease. But the practice is very old, and was familiar to me. The stomach

By pursuing the practice I have inculcated, a large majority of the cases of the disease, however violent, will submit. But occasionally we have to encounter some tremendous attacks of it, in which all our skill and resources are required. Cholera I have known to terminate fatally, such may be the vehemence and rapidity of its career, in a very few hours. These are its malignant states, occurring for the most part during the prevalence of some peculiar distemperature of the atmosphere. Even, however, in ordinary times, it will in some instances run its course in twenty-four hours, or half the period.

In the propriety of the practice I have recommended, I am the more confirmed, since, after considerable fluctuation, it was admitted to be the most successful in the dreadful epidemic of this nature in the eastern world, to which I have alluded. Copious losses of blood by venesection chiefly, and the liberal use of calomel with opium, according to the official reports, were the chief remedies, in which confidence was ultimately reposed.

Common cholera is extremely liable to recurrence, and to guard against which, all the exciting causes should be avoided—especially an exposure to the sun or night air, or in any way to check perspiration, cold feet, an excess in eating or drinking, or improper articles of food, any undue exercise, intemperate indulgence of passion.

An attention to the bowels is also demanded. These are to be kept in a soluble state, by the use of magnesia or rhubarb if required, and with a view to restore tone to the alimentary canal the bitters may be taken, as quassia or columbo. The elixir vitriol has also been recommended. Wearing of flannel should not be overlooked in the regulation of the prophylactic measures. But where we find a very strong predisposition to the disease, so that it is readily excited by slight causes, we may be persuaded that the primæ viæ, or hepatic system, has acquired a morbid susceptibility from an essentially deranged condition, which ought to be carefully ascertained and removed.

having been previously evacuated by frequent draughts of tepid water, it is recommended by Aretæus to give a quarter of a pint of cold water to check the purging, to cool the ardent heat of the stomach, and to abate the thirst, and this he advises to be repeated as often as the patient throws up what he drinks. Many since Aretæus have extolled the remedy, and to use the language of a writer on the subject, "for it cools, blunts acrimony, and restores the tone of the parts. In this country it may be safely given, if large draughts at a time are avoided."—*Parr's Medical Dictionary.*

Art. II. *Facts and Observations relative to the Disease commonly called Yellow Fever; as it Appeared on Board the United States' Ship Hornet in* 1828, *the United States' Schooner Grampus in* 1829, *and at the United States' Naval Hospital, Pensacola, in the Cases received from the Peacock, in* 1830. By Samuel Barrington, M. D. Assistant Surgeon U. S. Navy.

It was my intention, nearly two years ago, to have presented these remarks for publication, having then recently returned from the Pensacola station; but about that time, orders to one of the ships of the West India squadron induced me to postpone my design until after my return: supposing that, by another cruise in a topical climate, my observations would probably be more extended. The Erie, however, in which I last sailed, had the good fortune to perform her cruise and arrive in the United States, without having had a single case of malignant fever.

I have to regret that, in consequence of the medical journal of the Hornet having shared the fate of that unfortunate vessel, I have been obliged to trust much to memory and the few private notes taken on board, in the account of the disease as it occurred in that ship. The journal of the Grampus, (of which I was then surgeon,) is now in my possession; and also an exact copy from the journal of the hospital at Pensacola, kept by me when on duty there in 1830, containing the cases from the Peacock.

The disease made its appearance on board the Hornet while lying at Sacrificios, a small island about three miles from Vera Cruz, (Mexico,) in September, 1828. We had been there at anchor twenty-six days when the first decided case occurred. There was no epidemic in the city of Vera Cruz, excepting the Dengue; nor was the fever prevalent at any place where we had touched on our cruise. During the two months previous to this time, the weather had been clear and oppressively warm, with very little rain: the thermometer averaging 87° at noon; at no time above 90° nor below 79°. It was kept on the berth deck, immediately under the main hatch, in as cool a situation as any between decks. In the winter of 1827 the Hornet had undergone extensive repairs. She was "salted" and consequently very damp; the moisture collecting in drops on the beams, &c. when the atmosphere was charged with vapour.* When she was "broken out" at New York after her return in 1828, great quantities of mud and other filth were taken from her hold; and in her timbers and lower works was discovered a considerable collection of chips and shavings in a putrid state, which had fallen there during repair. The bilge water and smell from the hold in this ship were exceedingly unpleasant.

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* The sickness in the frigate Brandywine in her recent cruise to the West Indies, was attributed in a great measure to this cause, by Dr. W. P. C. Barton, her surgeon. See his "Hints," &c.

In the Grampus the first case occurred in July, 1829, while cruising off Cuba. The duty imposed upon this vessel caused her to be frequently in the harbours of Havana and Matanzas. For six or eight weeks before, and in the progress of the sickness, the thermometer ranged from 77° to 89°, averaging about 84°. The crew were necessarily much exposed night and day, and had often to lie down in their wet clothes and on a wet deck. This vessel was remarkable for her uniform neatness and cleanly appearance throughout. The bilge water smell was seldom perceived: the water coming out of the pumps perfectly clear.

How the Peacock was in these respects I have been unable to learn with satisfaction; I am informed that she was damp, from being salted. She was also "filled in," consequently without limbers; had a gun deck and a spar deck; being thus constructed for the Polar expedition. Before she arrived at Pensacola in August, 1830, there had been two cases of fever; both of which proved fatal. This ship had been once or twice at Matanzas, and several times at Havana, when the cables become coated with a dark offensive mud, of which they cannot always be completely cleared before being stowed away.

Of the causes of this disease, and the circumstances which are supposed to favour its origin, much difference of opinion has always existed; and as our evidence on this subject is mostly of a negative character, it is not probable that medical men ever will agree. Whether the remote cause be miasmata or animalculæ, it is not for me to discuss. With respect to the predisposing and exciting causes there is also much diversity of sentiment. In "lunar influence," to which so much importance has been attached by Dr. Caldwell, (see Prize Essay in No. XVI. of this Journal, for August, 1831,) I have not the smallest faith. Patients were equally attacked at all periods of the moon, and the greater or less intensity of the disease appeared to be regulated by the temperature and changes of the weather. There is a strong belief with many that sleeping in the moonshine is at all times highly dangerous. In every vessel in which I have sailed, nothing was more common than to see the men sling their hammocks between the guns, and in other places on the spar deck, in warm nights, exposed for hours to the rays of the moon without the slightest ill effects. I have been particular in noticing and remarking to others this repeated exposure with impunity to "lunar influence." The following facts will illustrate the connexion between the degree of temperature and the progress of this disease. When the Hornet arrived at the Navy Yard, Pensacola, (in latitude 30° 19′ N.) from Vera Cruz, (October 29th,) the thermometer had fallen to 69°. While here, (two days,) we had but two new cases. After leaving Pensacola, on our way to New York, no one was attacked until we got into the latitude of the southern capes of Florida, (about 24° 30′;) while here the temperature varied from 78° to 82°, and we had an increase of seven new cases to our sick list, two on the 5th, and five on the 7th November, and one more, being the last, on the 8th. From this time as we increased our northern latitude, and the thermometer gradually descended towards the freezing point, we had not another case, and those already attacked rapidly convalesced.

Of *prophylactics*, (in the comprehensive sense of the term,) a few words may be said. Cleanliness is among the most important; not only as applied to our persons, but also to surrounding objects, especially on ship-board. The bellows, or air-pump, of Commodore Barron, is a valuable contrivance for the displacement of foul, and introduction of fresh air below decks. It was not used in the Hornet while I was attached to her, nor in the Grampus or Peacock. On board the Erie, in her late cruise, it was constantly in operation. The chloride of lime is an important agent in purifying places inaccessible by the scrubbing-brush and holy-stone, and destroying the noxious effluvia of crowded apartments. That it is highly useful on ship-board has been sufficiently demonstrated. When it has been otherwise, I must incline to the belief that it has been carelessly or too sparingly employed. It was not used in the Hornet or Grampus, nor in the Peacock; although this latter vessel had it on board; but such was the confidence of the surgeon and other officers in the apparent absence of all cause of disease from an internal source, that it was not resorted to. It is now in general use in the West India squadron. In the late cruise of the Erie this article was dealt out unsparingly, and occasionally to the temporary annoyance of those on board; and I am convinced that to this, with the prompt and effective coöperation of the executive officer, in having every tangible part kept free from filth, may be chiefly attributed that ship's escape from the most alarming disease of the tropics. The chloride mixed with water was poured into the pump-wells, and distributed throughout the holds, chain lockers, berth deck and other parts. Its effects upon the bilge water was very evident to all. By experiments made on board ship, it was ascertained that it required seventeen grains of chloride of lime to decompose the sulphuretted hydrogen contained in half a pint of bilge water. It must be remarked, however, that the Erie had the peculiar faculty of generating the most concentrated bilge water in the shortest possible time.*

Neither the rule laid down by Currie, to use gently stimulating drinks, nor that of Mosely, to drink nothing but water, will admit of a general application. Previous habits must here be the guide. I have not observed that those who were accustomed to the regular and moderate use of spirituous drinks were more obnoxious to attacks of fever than others of rigidly temperate habits; on the contrary, and I regret to say it, (because it affords a pretext for the intemperate,) in two or three instances I have seen the abstemious carried off in a few days, while hard drinkers, under the same exposure, have escaped. But from all I have seen I am convinced that the temperate man has, as a general rule, the best chance. Lemonade, if not too freely used, is one of the most salutary and refreshing drinks in a hot climate.

Music, though not often regarded as a preventive, is in my opinion, an important mean of placing the system, through the influence of the common sensorium, in a favourable condition to resist the action of morbific causes. Smoking tobacco must also be enumerated among the means of keeping off attacks of fever in what are called miasmatic situations. In an infected atmosphere, particularly at night, I have seen and experienced sufficient, not to doubt its utility.

The question "is yellow fever contagious?" has been so completely decided in the negative, that additional evidence would be almost superfluous; but I must mention one striking proof, out of many I have seen, which of itself, should remove all doubt on this head. When the sick were brought from the Peacock to the hospital near Pensacola, their mattresses, blankets, hammocks and bags, as they came from the infected ship were regularly taken by the attendants to be aired, and their clothes washed. The beds and bedding of those who died were immediately removed by the same persons; and not in a single instance was any one connected with the hospital attacked with the disease. The whole number of attendants, including officers and those who resided at the hospital, (the washerwoman, cook, and their families, two nurses and a porter,) was twelve, besides six or eight patients with chronic complaints, and four men from the Peacock who were temporarily engaged in attending upon their sick ship-mates.

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* The opinion that sulphuretted hydrogen is the active ingredient in the supposed miasma of yellow fever cannot be sustained; but that disease will result from respiring a long time in an atmosphere strongly impregnated with this gas must be admitted. Experiments by Dupuytren and Thenard have shown that "air containing 1-1500th part of sulphuretted hydrogen is instantly fatal to a small bird; that containing 1-800th part killed a middle-sized dog; and a horse died in an atmosphere which contained 1-150th of its volume."—*Turner's Chemistry.*

"Can the yellow fever be taken more than once?" is another question "adhuc sub judice." I have never seen a person in a second attack, unless a relapse may be so considered. Three patients at the Pensacola Hospital informed me that they had had the disease before: two of them at Key West in 1823, and the other at New York, in 1822.

Symptoms and mode of attack.—In a majority of instances the onset was without any previous indisposition, and the time generally between sunset and sunrise. A pain was felt in the head, back, or extremities; frequently in all these parts: sometimes preceded or attended, at other times followed by a chilliness. In a few a violent pain was experienced for a short time in some one particular part, afterwards becoming general. In one patient on board the Grampus, the penis was the seat of this suffering: in another the attack was announced by a neuralgic affection of the right temple. In several the knees were alone complained of at first; and in four patients in the Hornet, a spasmodic affection of the muscles of the leg was the prelude. The pulse, during this time, appeared to maintain its natural condition, or nearly so. After a short time, (from half an hour to two hours or more,) reäction commenced; the head-ache became more violent; other pains continued unabated; the skin hot, even when coldness was complained of, and generally dry, but occasionally the reverse, cool and moist. The patient would sometimes say he felt hot and cold at the same time; the bowels were constipated; the pulse full, bounding, and frequent; in one it intermitted every eighth stroke. The eyes in the sanguine and robust were red, painful, and injected; the respiration hurried; urine sometimes suppressed, and in many cases a difficulty of swallowing existed. Nausea, irritability of stomach, and pain on pressure at the epigastrium, were almost constant symptoms. In many there was a vomiting of bilious matter in small amount, and a distressing sensation of thirst and internal heat. The tongue in some was furred, in others but little altered. The cerebral functions at this period were not perceptibly impaired; but expressions indicative of great and even unnecessary alarm were occasionally uttered. When the fever made its appearance in "nervoso-bilious" temperaments, and in certain subjects not of this temperament, it seemed as if the energies of the constitution, or the "vis medicatrix" if you please, were not sufficient to produce reäction. The patient would tell you "he felt very unwell, but could not say how or where." These cases were always the most difficult to manage.

When the early symptoms were subdued by the judicious application of remedial means, convalescence and recovery rapidly followed. On the other hand, when these means were neglected, or, notwithstanding their use, the morbific action predominated, a different condition of things was soon presented to our notice. The stomach refuses to retain both drinks and remedies; and when not tantalized with either, will eject its own morbid secretions, however small in quantity; the bowels are either obstinately costive, or are stimulated, perhaps by medicine previously taken, to the frequent discharge of small brown, greenish or watery stools, attended with griping; hæmorrhage takes place from the gums or nose, or both, and blood is sometimes discharged per anum; delirium is now and then met with, but more frequently the patient lies in a comatose state; the skin becomes cooler and often covered with moisture; the wrists are cold; the tongue and teeth covered with a brown or bloody crust. The matter ejected from the stomach at first resembles flakes of a brown substance suspended in a watery fluid; the proportion of brown increasing at every recurrence of the vomiting. There is, with many, an inclination to sing; they are very restless in any position, sometimes jumping out of bed to lie a moment on the floor or deck; pitiful sighing, alternated with obscene remarks, and a desire for coition was not uncommon. An itching of the genitals, and a constant rubbing or pulling at them, was observed in nearly all the fatal cases on board the Hornet, and in several of those of the Grampus and Peacock. In some there was a strong desire to eat shortly before death. As the latter stage draws near, the breath becomes very fœtid; more particularly in those who used mercury freely; confirmed black vomit takes place; hiccup; the skin of the neck and face becomes of a bronzy yellow; the patient, if asked, will say he has no pain, and express a desire to get up and walk about, which indeed he often does; he will be picking at his lips and teeth; the belly occasionally distended with flatus, (meteorism;) the eyes become fixed and partly closed, showing only the white; subsultus; irregular respiration; heaving of abdomen; convulsions, resembling in some a fit of epilepsy; and finally death. Muscular strength is often retained to the last moment; and it is not unusual to see a patient rise from his bed, make some violent exertion, lie down and quietly expire.

Treatment.—(Hornet.) In the Hornet there were fifty-five cases, of which eight died. The disease was there treated, at the instance of Dr. Birchmore, surgeon of the ship, at first on the mercurial plan, which was then considered the only legitimate one. It was afterwards varied, and with a better result; for out of the first twenty-six who were attacked, five died, and three only out of the remaining twenty-nine. After an efficient dose of calomel and jalap, calomel alone was given in the dose of grs. v.—viij. every three hours; and ung. hydrarg. rubbed in various parts of the body, the object being to excite salivation, in which condition two deaths occurred. Of the few who were bled, every one recovered. The precise number is not known; I find but three mentioned in my notes. The arsenical solution was prescribed in some cases without any good effect. In the latter stages the vol. alkali and sp. terebinth. were used without advantage. The charcoal was given once with apparent benefit. Antimonials invariably produced mischief. Tinct. opii, one hundred and forty drops in the commencement of the attack, before reäction was established, but the pain almost insupportable, was followed by prompt relief in my own person.

(Grampus.) In the Grampus the treatment was different. Having witnessed in the Hornet the inferiority of the mercurial plan, and being here in sole charge of the sick, I determined to pursue a course which to me at least seemed more in accordance with the pathological condition believed to exist. In this vessel there were thirty-six cases, and four deaths. When the attack was violent, and reäction considerable, attended with a full, active pulse, and severe head-ache, which happened in a majority of instances, I drew blood from the arm until a decided impression was evident upon the circulation. To attain this object, seldom less than twenty-four ounces, more frequently thirty-two ounces and upwards, would be required. This was sometimes followed by cups to the epigastric region, and when constipation existed, a mercurial or saline purge, aided by enemata. As a refrigerant, (in the common acceptation of the term,) the nitrate of potass was found very serviceable, with lemonade, cool barley water, flaxseed tea or gum water for drink. At the same time cold ablution was employed, which was very grateful as well as beneficial.

Case I. James Spillman, marine, æt. 30, of intemperate habits.—*September 3d.* Was ashore yesterday "on liberty" and indulged freely in drink. Says he did not feel well in the morning, but did not complain, as that would have prevented him from going ashore. Has violent head-ache; skin warm; eyes injected; pulse full and frequent; nausea; foul tongue. Took sulph. sodæ, ℥j.; and arrow root.

(These symptoms were supposed to be caused by the stimulus of drink on the day previous, and for this reason he was not bled.)

4th. Has high fever, with pain in head and back; tongue coated; bowels slightly moved. Ordered cups to stomach, cold ablution, pulv. nitr. potas. gr. x. every three hours; lemonade, arrow root.

5th. Very bad last night; at times delirious; stomach very irritable; great difficulty in swallowing; pain at epigastrium; very little fever or pain in head. Ordered blister to epigastrium. Solut. sulph. quin. every two hours.

6th. Vomiting continues. The medicine was rejected. Gave him pure lime juice, which was of no service. About 10 A. M. yesterday, he commenced ejecting a dark fluid from the stomach, the colour becoming deeper towards night; this morning it is quite black. Blister drew well. Skin and eyes assuming a yellow tinge. Speaks altogether in Dutch; does not understand a question when put in English; have to employ an interpreter. Is very restless, and has lost the power of swallowing.

8 *P. M.* Spillman lay in a state of stupor during the day, without vomiting or taking any drink. His hands and feet became cold towards evening; the ears and other dependent parts assumed a dark appearance; skin over the neck and breast yellow. At a quarter before 7, after one or two very partial convulsions, he expired.

Post mortem examination at 8½ *P. M.*—The stomach was taken out and examined. It contained a gill or more of the matter of black vomit. The outer surface exhibited a dark spot near the cardiac, and another near the pyloric orifice, and a few large veins filled with blood. Internally the neighbourhood of the cardia and pylorus were in a state of gangrene. The mucous coat was thickened and of a dark red colour; the rugæ very large and prominent, and the vessels much injected. In some places were streaks of grayish matter, not easily removed, which by candlelight had the appearance of impure pus or lymph. The coats were easily separated from each other. The peritoneum was sound, as well as the liver and intestines, which, however, were only examined externally. The time allowed for the dissection was limited; it was performed by candlelight, and under many other disadvantages, which rendered it impracticable to prosecute it further.

Remarks.—It is evident that this case was improperly treated in its commencement; having been mistaken for nothing more than a drunken debauch, so common among men who go ashore "on liberty."

Case II. John Harrison, O. S. æt. 23, was attacked with the disease in a mild form on the 16th September, from which he was reported convalescent on the 23d. On the 25th he experienced much uneasiness in the stomach and bowels from eating duff,* (or dough,) the day before, for which he was ordered salts and diet. On the 26th the ordinary symptoms of fever were developed, for which, (being considered too weak for the loss of blood,) were prescribed saline solution, enemata, cold sponging, barley water, &c.

27th. Complained greatly of his knees; otherwise as yesterday.

28th. Less fever; perspiration; frequent watery stools attended with pain; tongue clean; stomach irritable; is in great distress; constant sighing; urine suppressed; breath offensive. Ordered blister to epigastrium; effervescing draught; cold ablutions continued; thin sago.

29th. Vomited much in the night; great pain in limbs and head; skin cool; tongue still clean; pulse slow and feeble; urine comes freely; had frequent watery stools in the night; hæmorrhage from the gums; teeth covered with a dark crust. In the afternoon had frequent and painful vomitings of a black matter mixed with milk which he had been drinking; tongue dry and parched; pulse slow and weak; great pain in legs; straining, but no passage from the bowels. Ordered pil. opii, gr. ij. and sinapisms to calves of legs.

7 P. M. Has had some sleep; pain has left the legs; still vomits, but less frequently and with less pain; begs for another pill. Ordered opii, gr. iss., and repeat at midnight; cold tea for drink.

30th. Slept well, and only vomited once or twice in the night. Says he feels quite well, and wants to walk about—a bad sign—tongue dry in centre, edges moist; no pain any where.

7 P. M. Has been vomiting occasionally the same dark matter as yesterday; dozes a little now and then; respiration irregular; pulse slow; skin cool; hæmorrhage from gums continues; drinks weak coffee and milk, and sucks an orange; talks incoherently; sings "bonnie laddie;" says he is well; makes many ludicrous remarks. ℞. Opii, gr. iss.; milk and water for drink.

October 1st.—Very restless all night; talks, sings, and cries out constantly; vomited once this morning about a gill of the same black matter; pulse slow and weak; skin warmer; tongue dry; teeth covered with dark blood, which comes from the gums and corners of the mouth; skin and eyes of a dirty yellow colour.

2 P. M. Since morning he has taken nearly a pint of milk; pulse more frequent; vomiting ceased; gums do not bleed so much; subsultus tendinum; feet are cool, and when suspended from his cot, becomes livid.

9 P. M. Has been struggling in the greatest agony all the evening, and expired at fifteen minutes before nine. Being under way, the decks much lumbered, and it being desirable to dispose of his body as soon as possible, there could be no post mortem examination.

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* A well known sailor's mess in imitation of plum-pudding.

Remarks.—A relapse was here brought on by improper diet, eating duff, during convalescence from a former attack. It will be seen that hæmorrhage and black vomit took place before any opium was administered; of course not caused by that medicine, as Dr. Potter says. In several cases it has been of the greatest benefit. Venesection here seemed to be contraïndicated by the debility consequent to the previous attack. But I now believe it might have been beneficially employed.

Case III. William Jarvis, O. S. æt. 22. This was also a relapse, probably brought on by improper food; which, however, he denied.

Oct. 3d. Was attacked in the night with vomiting and purging, attended with pain in the bowels, for which he took chalk mixture with laudanum.

4th. Bowels relieved. Feels very weak and sick at stomach; eyes yellow, skin slightly so, and cool. Drank some thin chocolate, which agrees with him. Ordered to resume the sulph. quinin. which he had been using in his convalescence.

1 *P. M.* This morning he swallowed some pieces of orange, which occasion great pain at stomach and hiccup. Has partially vomited several times, but is not much relieved. Gave him ipecac. gr. xx. and some warm weak coffee. The emetic brought up some of the orange, and afforded temporary ease; but in three hours the severe pain returned to the stomach, and extended to the thorax, attended with great difficulty of breathing and general distress. Ordered blister to stomach; enema. Fell into a sleep, from which he awoke about midnight as from a dream, in great pain and anxiety. He had nearly recovered from this, when, a few minutes after 1 A. M. a sudden convulsion terminated his existence. He was perfectly sensible throughout the disease.

Post mortem examination. Done at sea, Oct. 5th, at 6 *A. M. five hours after death.*—The peritoneum exhibited its natural appearance, and the stomach but few marks of disease externally. It contained about half a pint of a watery fluid mixed with thickened mucus. The internal coat was thickened and inflamed, particularly near the pylorus, where it was dark-coloured and covered with grayish lymph. There was no black vomit. The blood-vessels were not injected as in Spillman's case; but there were several red spots here and there. The liver was light-coloured. The lungs and pleura showed no traces of disease.

There was no death in the Grampus after venesection.

(Peacock.)—The cases sent from the Peacock to the Hospital, Pensacola, were either of a more malignant character than those of the other vessels, or the treatment was not such as was calculated to produce an equally beneficial influence and successful result, as will be seen by the proportion of deaths. Out of thirty-eight patients admitted, nine died. Notes of these cases were taken by me at the bed-side of the patient. These were condensed or transferred verbatim into the journal, of which I have kept an exact copy; as well as of Dr. SHARP's account of each from the moment of attack to the time they were sent to the hospital. Dr. Sharp was then in charge of the medical department of the Peacock; her surgeon and assistant-surgeon being ill with the fever. The hospital surgeon, Dr. PAGE, was devotedly attached to the doctrines and practice of RUSH and POTTER, and the generality of tropical writers; consequently, the mercurial plan was here proposed. My objections, derived from a limited experience, were not to be successfully opposed to such authority; nor could I, with propriety, urge them. Yet I must, in justice to Dr. Page, (now deceased,) say that his faith in the ultra-mercurial practice began to be shaken, and towards the termination of the sickness, he admitted that a different mode of practice might be at least equally successful, and that our prejudices should rather be governed by the facts we see, than what we learn only from the authority of others. I do not mean to question the veracity or accuracy of Professor Potter, of Baltimore, when, in his lectures on yellow fever, in relating the success of his practice in three different years, he states that in the first year, out of seventy-two patients, only three died; in the second year, out of four hundred, only five died; and in the third year, out of forty-eight, not one died. Who has ever boasted of any thing like such success? May it not be asked, were they all cases of yellow fever? His plan was to give calomel in scruple doses every two hours, and to excite salivation if possible. The Peacock, when the sickness was prevailing among her crew, was anchored at Navy Cove, about four miles from Pensacola, on the opposite side of the Bay, and six miles from the hospital. The sick were sent off in boats as soon as possible after they were attacked; but they had generally been bled, or otherwise prescribed for, by Dr. Sharp, and I believe that many owe their lives to the prompt and judicious treatment they received on the spot. The quotations in the following cases are from Dr. S.'s statements.

CASE IV. Midshipman R. "was attacked on the 23d inst. (August,) with violent pain in the head and back. V. s. ad ℥xiv. was ordered, and an emetic of vin. antim. Yesterday v. s. ad ℥xvj. ℞. Calomel, ℈j. Barley water. I found him this morning with hot, dry skin; furred tongue; pulse soft and quick; less pain in back; a heavy, full pain in left temple. ℞. Ol. ricini, ℥j." Symptoms on admission into the hospital, (August 25th,) fatigue and restlessness; skin very hot; tongue furred; pulse small, tense and frequent. Was bled ℥viij.; cold water to head. Took calomel gr. xxx. in three powders, the last of which produced slight vomiting.

26th. This morning skin cooler; less head-ache; pulse frequent, but soft. Has had two light brown stools. ℞. Ol. ricini, ℥j. Ordered frictions with ung. hydrarg. to arms and thighs; barley water.

1 *P. M.* Skin hot. Sponge with water and vinegar. Fainted in the easy chair. Repeat mercurial frictions.

9 *P. M.* Has had slight delirium; skin hot; stomach irritable; acid eructations. ℞. Magnes. calc. ʒj. Bene water* for drink. Cold to head, &c. continued.

27th. Very restless in the night, with occasional delirium; had a few small stools of a yellow, watery substance mixed with magnesia. Skin quite cool this morning, and inclined to moisture; that of forehead yellow; stomach irritable and painful on pressure. Applied sinapisms to epigastrium and to the legs. Ung. hydrarg. to groins and arm-pits.

1 *P. M.* Irritability of stomach continues; eyes yellow. Ordered effervescent draught.

4 *P. M.* Has hiccup; mind wandering; inclination to sing. Cont. mist. efferves. p. r. n.

8 *P. M.* Delirium increasing; frequent hiccup; pulse slower and weak. Applied blisters to epigastrium and lower extremities. Wine sangaree for drink, is unable to swallow it.

28th. Continued in a comatose state all night, with occasional sighs and hiccup. Lower extremities becoming cool. Blisters have not irritated the skin. Face and neck yellow; small quantities of a brownish fluid discharged from the stomach; breath offensive; eyelids nearly closed, showing only the sclerotica.

1 *P. M.* Is insensible to surrounding objects; confirmed black vomit; is unable to swallow any thing; heaving of abdomen.

3 *P. M.* Respiration short and convulsive; pulse sinking; extre-

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* A single leaf of the bene plant, (Sesamum orientale,) in a tumblerful of water, forms one of the most grateful and refreshing drinks that can be given to a fever patient; and from its being colourless and almost tasteless, is seldom refused.

mities cold. Died at half past 5 P. M. There was no examination after death.

Case V. Frederick Lambert, "was attacked yesterday afternoon, (August 28th,) with a chill, pain in the head, and other attendant symptoms of 'fever.' I bled him to the amount of ℔iij., and gave him calomel, ℈j. which has operated once." On admission into the hospital very little was required to be done. He took calomel on the 29th and 30th, 'by way of security;' but his convalescence may be dated from the first day of the treatment.

Case VI. J. D. R. master's mate, was taken ill last evening, (28th,) and brought to the hospital this morning. No account of his case. Says he took some medicine last night, (supposed to be calomel.) Bowels have been twice opened. Present symptoms. Slight head-ache; skin warm, but moist; tongue furred; pulse small and frequent; no pain at epigastrium. Ordered calomel, ℈j. At 11 A. M. ol. ricin. ℥j. At 12, calomel, ℈j. Barley water.

12 *M.* Has head-ache; skin hot; pulse frequent, tense and quilled; eyes injected. Was bled ℥x. Cold water to head.

2 *P. M.* Calomel, ℈j. Cold water continued.

5 *P. M.* Has had three bilious stools; some fever; inclined to sleep. Repeat calomel, ℈j. at 12, (nocte.) Drinks and cold applications as heretof

30*th.* Head-ache; skin warm; tongue furred; pain at stomach. Took calomel, ℈j. at 8 A. M. At 11 the febrile symptoms increasing, was bled ℥vj. which gave relief.

2 *P. M.* Has had several very copious dark green stools; has been asleep, vomited a small quantity of blood. Ordered ung. hydrarg. rubbed on abdomen. Arrow root.

6 *P. M.* Delirium; says some one in the room is going to kill him. Ordered sinapisms to lower extremities. Enema. Calomel, ℈j. at midnight.

31*st.* No fever this morning; less pain in head and stomach; mouth becoming sore; is less alarmed at his situation; stools green. Ordered calomel, ℈j. at 10 A. M. Tea, barley water.

1 *P. M.* Has an exacerbation; tendency to coma; head-ache; skin warm; pain at epigastrium. Ordered sinapisms to ankles.

3 *P. M.* Feels better; fever subsided ℞. Calomel, ℈j. Barley water.

11 *P. M.* Vomits a dark-brown, flaky liquid. ℞. Calomel, ℈j. at 1 A. M.

September 1*st.*—Black vomit; wrists cold; pulse scarcely perceptible. Ordered aq. calcis, ℥ss. At 10 A. M. ℞. Pulv. carbon, ʒss. every two hours. Bottles of hot water to lower extremities.

2 *P. M.* No return of vomiting since 10 o'clock. Continued charcoal and hot water to extremities.

3 *P. M.* Rejected the last dose of charcoal.

6 *P. M.* No vomiting since 3 o'clock; pulse more developed.

2*d.* Very noisy and restless all night; cannot swallow; rises frequently from bed; stupor; pulse thready, and can hardly be felt; feet and hands cold.

Died at 2 P. M.

Case VII. Simeon Philips, seaman, æt. 26, "was attacked this morning, (August 29th,) with pain in the head and back, and other symptoms of the 'fever.' I bled him ℔ij. and gave him calomel, ℈j." Admitted into the hospital at 9 A. M. Pulse slow, (48,) and soft, skin cool and moist. Took to-day calomel, ℈j. and the same followed by ol. ricin. ℥j. on the 30th. Was doing well until the afternoon of the 31st, when the stomach became irritable, attended with pain in back and abdomen, and restlessness. A blister was ordered to the epigastrium, and calomel, ℈j. The next day salivation took place, and he slowly convalesced.

Case VIII. Thomas Bowden, second seaman, Sept. 13th, "was attacked yesterday afternoon with excruciating pain in back and head, skin hot and dry; pulse strong, quick and very voluminous. Bled him ad ℔iv. before the pulse was reduced. Ordered calomel, ℈j. Enemata of warm salt water every four hours. Rice water for drink." Was reported convalescent on the 15th.

Case IX. Lieutenant H. This was one of those insidious cases referred to, as occurring in peculiar temperaments. It did not at first seem to be one which would require or bear bleeding. About the fifth and sixth day of the disease he appeared to be approaching to convalescence. At this time he had taken calomel to the amount of ʒiij. in doses of ℈j. each. On the seventh day an unfavourable change took place. He became delirious; his tongue and jaws were sore; was very restless. On the eighth day these symptoms increased. The parotid glands were swollen and painful; the tongue and mouth sore, but there was no salivation: the mercury here, probably displaying its toxicological rather than its remedial agency. The eyes and skin became yellow, and the breath offensive.—Tenth day. The swelling of the parotids somewhat subsided and without pain.—Eleventh day. Occasionally spit a small quantity of blood.—Thirteenth day. A small black spot appeared on the tumour of the right side. Died in the afternoon.

After death a large quantity of frothy, offensive matter, resembling the foam of ripe porter, issued from the right nostril. No dissection.

Case X. M. Hartnett, carpenter, "complained on the 7th, (September,) of the following symptoms—dizziness; sickness of stomach; languor; loss of appetite; tongue and mouth dry; pulse soft; bowels constipated. Ordered calomel, gr. xv. At 5 P. M. ol. ricin. ℥j.; drink rice water. Yesterday, (8th,) felt weak; tongue and mouth still dry; pulse as before; an uneasy sensation about the stomach; slight head-ache. Ordered enema of rice water every three hours. At bed-time a blister to epigastrium, and but little drink, as there was some irritability of stomach." Received at the hospital on the 9th, about noon.

Symptoms on admission—says he has no pain; skin dry; tongue dry and coated; great expression of anxiety; bowels open; pulse frequent and weak; stomach irritable; strains very much while vomiting blood, and a dark matter mixed with the fluids of the stomach; perfectly rational, and alarmed at his situation. ℞. Aq. calcis, ℥ss.; p. r. n. Constant moaning.

2 *P. M.* Nothing retained by the stomach; black vomiting continues. ℞. Acet. plumbi, ʒss.; aquæ, ℥j.; M. s. ʒij. every half hour.

7 *P. M.* Swallows with great difficulty; throat very sore; stomach less irritable; retains barley water.

10*th.* Incessant pitiful sighing; teeth gummy; black crust on gums, lips and tongue; pulse frequent and weak.

10½ *A. M.* Extremities cold; no pulse; eyes fixed; convulsive breathing; cheeks yellow.

Died at fifteen minutes before 11 A. M.

No calomel was given to this patient while in the hospital. Black vomit took place on the morning of his admission, and was temporarily checked by the acet. plumb.

Post mortem examination, three hours after death.—The stomach was distended with flatus; vessels of omentum and mesentery engorged; a few enlarged vessels on the external surface of the stomach. Liver lighter coloured than natural. Stomach contained about four ounces of black vomit mixed with particles of pus or mucus. The internal coat was smooth; no appearance of rugæ or villi; patches of grayish lymph or mucus adhering to it; pylorus thickened. There was not time allowed for a more minute examination.

Case XI. M. S. Aydon, marine, æt. 23, September 7th, admitted at 6½ P. M.—"Was attacked last evening with pain in the head and back; skin hot and dry; pulse quick and soft. Was bled to faintness. Took this morning calomel, ℈j.; v. s. repeated ad ℔iss. and an enema administered." Present symptoms—head-ache; fever; tongue furred; no pain at epigastrium. ℞. Calomel, ℈j. Barley water.*

8*th.* Bowels opened several times; last discharges yellow. At 10 A. M. ℞. Calomel, ℈j.; drink as before. At 2 P. M. ℞. Calomel, ℈j. which produced nausea, followed by vomiting of a black, flaky liquid; eyes and countenance bronzy. Ordered aq. calcis, p. r. n. Skin hot; strength good.

7 *P. M.* Has been bleeding at the nose; pain at epigastrium; has had a copious black stool.

8 *P. M.* Vomits the same black liquid. Continued aq. calcis.

9*th, at* 1 *A. M.*—Black vomit; limbs drawn up; eyes wild; skin hot; pulse quick; constant groaning. Ordered sinapisms to feet; cold ablution. ℞. Acid. muriatic, ʒss. in aqua, ℔ij.; drink with an equal quantity of barley water.

2 *A. M.* Flighty; skin cool; pulse moderated.

8 *A. M.* Skin cooler; pulse frequent and weak; pain at epigastrium; still vomits.

10 *A. M.* Blister to stomach. Skin yellow.

2 *P. M.* Says his teeth are loose; breath mercurial; stomach still irritable. Ordered aq. calcis, p. r. n.

7 *P. M.* Has been bleeding freely from the nose; less vomiting; blister well drawn; dress it.

10*th, at* 8 *A. M.*—Eyes fixed; heaving of abdomen; lips contracted and frothy; pulse very feeble; hands and feet cold.

Died at 9 A. M. After death frothing at the mouth. The muslin bandage on the head was soaked with a putrid, bloody foam.

Case XII. John Fullerton, "was attacked this morning, (September 10th,) with violent pain in the head, back and limbs; chilliness; pulse slow and labouring; skin hot and dry; nausea, &c. Ordered v. s. ad ℔iiss. which relieved the pulse and caused vomiting." Was brought to the hospital at 1 P. M. Says he was in the market boat, and taken ill about 6 A. M. Complains of pain in head; back and limbs; is very restless; easy in no position; pulse slow and feeble; skin cool; tongue furred. ℞. Calomel, ℈j.; barley water. At 4 P. M. calomel, ℈j.

8 *P. M.* Has been vomiting his drink; pulse quick; skin warm; restless. ℞. Calomel, ℈j.; drinks continued. Repeat calomel at midnight.

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* From Aydon's own account, it seems that he was unwell several days before he reported. Says he has eaten nothing since Thursday last, four days.

11*th.* Has pain in head and back; no fever; pulse 80; gums white; very restless; vomited some green bile this morning; has black stools.

9 *A. M.* ℞. Calomel, ℈j. and barley water.

1 *P. M.* ℞. Calomel, ℈j.

4 *P. M.* Very little pain; not so restless; stools yellow. ℞. Calomel, ℈j. to be repeated at 8 P. M. and 12, (nocte.)

12*th.* Head-ache continues; eyes dull and heavy; uneasy in bed; skin cool; pulse 80. ℞. Calomel, ℈j. and ung. hydr. to be rubbed in the groins. Calomel, ℈j. at 12. At 12½ vomited a yellowish liquid, containing brown flakes. ℞. Calomel, ℈j. at 4, and ung. hydr. to groins.

6 *P. M.* Comatose; rejects his drinks. Ordered calomel, ℈j. at 8 and repeat at 12, (nocte.)

13*th.* Still comatose; skin cool and clammy; stomach still irritable; had a bilious stool. ℞. Calomel, ℈j. at 10, and ung. hydr. continued.

2½ *P. M.* Vomiting continues. ℞ Calomel, ℈j.

7 *P. M.* Very uneasy; eyelids half closed; still vomits. Ordered blister to epigastrium.

14*th*, 8 *A. M.* Passed a restless night. Blister drew well; eyes and skin of cheeks becoming yellow; stomach very irritable; pulse small, slow and weak; skin cool and clammy. ℞. Mist. efferves. every half hour. Hot bricks to feet.

12 *M.* Stomach retains nothing; hands and feet cold; pulse very weak.

At 2 *P. M.* ℞. Sp. terebinth, ʒij.; sac. alb. et farinæ q. s. mucil. gum Arab. ℥j. M.—a tea-spoonful every half hour.

8 *P. M.* Has not vomited for some time; pulse slow and weak; restless. ℞. Calomel, ℈j. at 12, (nocte,) and at 4 A. M.

15*th, at* 8 *A. M.* Spits and vomits in small quantities a black flaky matter, mixed with the fluids of the stomach; extremities cold; skin and eyes of a dirty yellow; refuses medicine, &c.; sweat profusely in the night; no pain, but is restless.

1 *P. M.* Heaving of abdomen; black vomit; hiccup; delirium. Died at 6 P. M.

The total amount of calomel taken by this patient was ʒvj. and yet neither the mouth nor salivary glands were affected.

Post mortem examination.—The brain only was examined, and that but partially. The vessels of the pia mater were injected. The sinuses were empty. About ʒij. of bloody serum in the ventricles. Vessels of the plexus choroides congested. The dissection was not prosecuted further, for reasons which need not here be mentioned.

Case XIII. Dr. S. admitted at 6 P. M. September 15th. Was attacked about 8 o'clock this morning with a chill; shortly afterwards, pain in back and abdomen, followed by fever. By his own direction he was bled ℔iss. had thirteen leeches applied to the stomach, took a warm bath, calomel, ℈j. and an enema. On admission had very distressing pain in the loins and about the umbilicus; could not rest a moment in one position; skin warm; pulse full and frequent; tongue furred.

At 6½ *P. M.* Ordered an enema, which brought away a considerable quantity of dark fæcal matter, and relieved the pain in the abdomen. Took ol. ricin. ℥j. which was rejected.

9 *P. M.* Still has very great pain in back; skin cool and moist; pulse frequent. Took a Seidlitz powder; and the back was rubbed with a stimulating liniment.

At 10 *P. M.* The pain continuing very intense, gave him tinct. opii, ʒj. which in half an hour was followed by relief, and he fell asleep.

16*th.* Has had a comfortable night. Is free from fever and pain. Was convalescent on the 20th.

Many more cases might be cited to illustrate the comparative value of the different modes of treatment; but they have already exceeded the limits originally intended. I will conclude the account of the cases from the Peacock, by a tabular view of the time required for a cure in the mercurial and non-mercurial plans.

Of seven patients who were treated in the first method,

One took of calomel	5	scruples, and	was fit for duty in	20 days.
Do.	7	"	"	22
Do.	10	"	"	28
Do.	11	"	"	22
Do.	12	"	"	22
Do.	13	"	"	22
Do.	15	"	"	39

All of these were salivated.

Of seven who were treated on the non-mercurial plan,

Two	were well	and fit for duty in	11 days.
One	"	"	12
One	"	"	17
Two	"	"	19
One	"	"	20

Of the nine fatal cases, eight were treated with mercury; of whom five where salivated, or had the mouth affected.

The remaining cases underwent a mixed plan of treatment. In some of them calomel was used, but not with the view of salivating. These recovered in from sixteen to twenty-six days.

Of the four deaths in the Grampus, three took place on the seventh, and one on the fifth day. Of the eight deaths in the Hornet, one took place on the third day, two on the fifth, four on the seventh, and one on the eighth day.

Of the nine deaths among the Peacock's patients, three took place on the fifth day, three on the sixth, one on the seventh, one on the thirteenth, and one on the twenty-eighth. This last one died from a mortification and extensive sloughing of the cheek and upper jaw, consequent to salivation.

Recapitulation.—Of the whole number of deaths above-mentioned, (viz. twenty-one,) one took place on the third day, six on the fifth, three on the sixth, eight on the seventh, one on the eighth, one on the thirteenth, and one on the twenty-eighth.

From the account here given, and its accuracy may be relied on, it must be evident to every unprejudiced mind, that the mercurial treatment of yellow fever is not what it has been so long considered by a majority of writers on this disease, the only rational and successful mode of management. In many cases the prevailing symptoms have been certainly aggravated, and new ones brought into existence. But I have also seen the disease "broken," as it were, on the appearance of a sore mouth, or a flow of saliva; and "post hoc, ergo propter hoc" is always triumphantly applied to such fortunate coïncidences.

Philadelphia, March 30th, 1833.

Art. III. *Cases and Observations regarding Puerperal Fever, as it prevailed in the Pennsylvania Hospital in February and March,* 1833. By Hugh L. Hodge, M. D. one of the Physicians of that Charity.

Few circumstances more frequently baffle the scrutiny of the scientific physician than the causes of epidemic diseases. They seem involved in a mystery, to us impenetrable, but which future generations, assisted by the lights of new, or improved sciences, may possibly elucidate.

The fact, that puerperal peritonitis should ever prevail in the Pennsylvania Hospital, will appear inexplicable to those acquainted with the fine wards allotted to the lying-in women, and with the great neatness, comfort, and excellency of their accommodations in an institution, noted in our country for the superiority of its provisions for the sick poor. For the information of those not thus informed, it may be observed that the buildings "exhibit a south front, extending, east and west, two hundred and eighty-one feet. They consist of a centre building, united, by long wards of three stories in height, to two wings extending north and south." The centre building measures sixty-four feet in front by sixty-one in depth, and, with the balustrade surrounding its cupola, seventy-two feet in height. The second story is occupied by the lying-in wards, and two chambers for medical assistants with spacious staircases and passages. These wards extend the whole front of the centre building, and consist of two large rooms on the east and west, measuring twenty-four feet by twenty-three feet and fifteen feet in height, separated by a smaller room for the nurse, sixteen feet by eighteen feet. Ventilation is easily and fully effected, not only from their exposed situation, and the arrangement of the windows, but also from openings into the chimnies near the ceiling. The hospital occupies the interior of a square, "surrounded by majestic forest trees," and containing four and a quarter acres of ground. On the east, a square of similar dimensions, and on the south and west, large lots, containing in all about ten acres, are preserved unoccupied, so that a free circulation of air is secured; while every attention has been paid that fresh air be daily and frequently admitted to the lying-in wards, with suitable precautions.

Notwithstanding, however, these favourable circumstances, no spot in this city has been so frequently visited with peritonitis puerperalis as the Pennsylvania Hospital; and as already intimated, the efficient cause has escaped the attention of the able physicians and managers of this charity. It can merely be observed, that the atmosphere of the house induces a predisposition to peritoneal inflammation after parturition, at particular but uncertain periods, and that this state of the atmosphere also predisposes other patients, especially surgical ones, to erysipelas, as the two diseases have usually been found coexistent in the hospital. This idea that erysipelas and puerperal peritonitis are dependent when endemic in this institution upon similar causes, is confirmed by some attending circumstances, to which we may advert hereafter.

The following table, prepared by Mr. Malin, the librarian, exhibits the number of patients admitted into the lying-in department from its establishment in 1803, to the 31st of March, 1833, of those that have been removed before delivery, and of those who were confined, with the event whether death or recovery:—

TABLE I.

A Statement of Cases admitted into the Lying-in Department from its Establishment in 1803, *to April* 28*th,* 1833.

Official Year ending April 28th.	Women Admitted.	Removed.	Delivered.	Recoveries.	Deaths.	Official Year ending April 28th.	Women Admitted.	Removed.	Delivered.	Recoveries.	Deaths.
1803	2	1	1	1		Brought over	124	6	117	106	7
1804	3		1	1		1819	26	1	24	24	
1805	5		7	7		1820	50	3	46	46	
1806	3		2	2		1821	48	3	46	42	4
1807	5		6	5	1	1822	33		33	32	1
1808	5		4	4		1823	48	4	43	38	5
1809	5		5	5		1824	43	6	35	33	2
1810	6		6	5	1	1825	41	3	43	43	
1811	5	1	5	5		1826	30	4	27	27	
1812	8		7	7		1827	38		36	35	1
1813	4		4	4		1828	48	5	42	42	
1814	7		6	6		1829	68	5	62	60	2
1815	17		17	17		1830	68	5	63	60	3
1816	14	2	13	10	3	1831	46	5	44	36	8
1817	17	1	12	10	2	1832	36	4	28	26	2*
1818	18	1	17	17		1833	48	8	48	43	5
Carried over	124	6	117	106	7	Total - -	795	62	733	693	40

The whole number of deaths after 733 labours amounts to 40; nearly 5.6 per cent. but the immediate causes of death in individual cases have not been recorded. Some are said to have died of hæmorrhage, or of phthisis pulmonalis, and one of mania, but most of the deaths have resulted from puerperal peritonitis. From these documents, and from the accounts given by physicians connected with the institution, it appears that the disease has prevailed at four distinct periods, viz. in 1816–17; in 1821–22–23–24; in 1829–30–31, and again in February and March, 1833, but the number of cases has not been preserved; unfortunately, if reports can be depended on, they have but little exceeded the number of deaths.* It should also be observed, that although the disease prevailed during the years mentioned, yet the cases were frequently distinct—days and weeks elapsing between the illness and death of one individual before another was affected—while many deliveries occurred without any peculiar or threatening circumstances. The females removed to other and distant wards were apparently as liable to the complaint as those who remained in their original situation. This was remarked during the last endemic, as well as on preceding ones. These facts bear upon the subject of contagion and infection.

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* The two deaths mentioned as having occurred in the official year 1832, were at the commencement of this year, namely, in May, 1831; for the wards were closed June 1st, 1831, and no death occurred from the reöpening of the wards in September, 1831, to the 17th February, 1833—a period of more than seventeen months.

In consequence of the number and fatality of the cases occurring in the fall of 1830, and the subsequent winter and spring, the managers, by the advice of the physicians, determined to close the wards for a time, which was done in June, 1831. They were re-opened in September following.

Having been elected in November, 1832, a physician to this department, as successor to the venerable Professor James, who for twenty-five years had ably served the institution, but whose increasing infirmities rendered it necessary to pay those attentions to his own comfort, which had been sedulously bestowed on the welfare of others, I received from my colleague, Dr. Charles Lukens, the charge of the wards on the 1st of January, 1833, then containing six patients, of whom two were already confined, and four in expectation. All were very well; no complaints were heard beyond the usual pains of labour, and the little pain and irritation preceding or accompanying the flow of milk. The wards were daily ventilated, and every attention was paid as usual to the comfort and health of the inmates.

Under these circumstances, Margaret Reilly, a young woman of good constitution, who had been seven weeks in the ward, and apparently very well, was delivered after an easy labour of her first child, on Tuesday, the 12th of February. On Wednesday, the 13th inst. as she had some febrile excitement, and a yellow, foul tongue, a dose of magnesia was prescribed—the patient complaining of no pain, and no suspicion of puerperal fever being entertained. I did not see her again before Saturday, the 16th inst.† and was surprised to find her system prostrated under a severe and acute peritonitis. On inquiry I found that the magnesia had operated freely, but with considerable pain on Wednesday night and Thursday morning, but apparently with complete relief to the febrile and other symptoms. On Friday noon she had severe pain in the abdomen with diarrhœa and fever, the house physician, Dr. MIFFLIN WISTAR, (to whose able and indefatigable attentions by day and night during this trying epidemic, as well as for the report of cases appended to this paper, I feel greatly indebted,) bled her ad deliquium, and soon after had sixty leeches applied to the abdomen, so that the symptoms disappeared. During the night, however, they returned, the inflammation not having been completely subdued, and I found her on Saturday with excessive tympanitis, great pain in the abdomen, propagated by pressure on the epigastric region to the knees and also to the wrists, where pain was severe. The surface was cold and pallid, features contracted, eye sunk, pulse excessively frequent, and very weak. Stomach irritable, and her mental powers were beginning to fail. No expectation was entertained that recovery was possible—from the extent of the inflammation and the prostration of the system. The treatment* proved but palliative, and the patient died the succeeding day—the sixth after delivery, and the third after the symptoms of inflammation were first decidedly manifested.

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* Vide Table II.

† The regular days for visiting the hospital are Wednesdays and Saturdays. All the ordinary duties of the house are left in charge of the house physicians—graduates in medicine.

On post mortem examination the uterus was found perfectly healthy; the sanguineo-purulent matter on its inner surface could easily be removed, and no other evidence of disease was there manifested. The ovaries were inflamed; the right merely on the surface, but the left was much enlarged, exceedingly soft, and of a dark colour. The whole peritoneum bore marks of intense inflammation, with free depositions of serum, pus and lymph. On the posterior surface of the uterus lymphatic depositions were made under the peritoneum in the cellular membrane, but exterior to the uterine tissue.

On the death of this individual the ward was vacated, the bed destroyed, the room cleansed, whitewashed, purified by solutions of chloride of lime and soda, the fires removed, and the windows kept open for several days and nights in succession. The females to be confined were divided—part remained in the east room, while four were removed to a large room in the northern extremity of the western wing of the hospital. In this room the next delivery occurred.

CASE II. Ellen Lehy. This patient was of a sanguine temperament, florid complexion, and good muscular developments. Three weeks before her confinement she complained of irregular but severe pains, apparently announcing labour, generally in the back, often in the sides and lower limbs; her pulse was full and strong, bowels costive. She was several times bled and purged, and daily for a week or more used a warm bath. These measures, in conjunction with a farinaceous diet, had the desired effect, so that for a week before her confinement she had no pain or other symptom of irritation. Her general health, strength and spirits appeared to be very good.

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* See Case I. appended to this report.

Delivery ensued without difficulty early on Tuesday, the 26th of February, nine days after the death of Riley, and in a different ward. The next day felt and appeared very well; pulse being rather frequent and tongue whitish. On Thursday morning, the 28th inst. about 4 A. M. had a slight chill, and some little pain, like after-pains—fever and restlessness followed; V. S. ad deliquium relieved every symptom of general and local irritation at the time. When I saw her about 9 o'clock, A. M. said she felt perfectly well, had not the least tenderness on pressure, or even by grasping the uterus; no tympanitis; skin moist, but her pulse was very soft, frequent and weak; complexion mottled, particularly in the face, and respiration hurried like a person agitated, or exhausted by fatigue; tongue whitish, and lochiæ somewhat offensive; no disposition to secrete milk. There being no evidence of local inflammation, and the pulse being weak and frequent, the neutral mixture, with morphia, rest, absolute diet, and fomentations to the mammæ were prescribed; also injections of warm barley water into vagina. At every visit, my patient would say she was not sick but merely weak; but the peculiarity of the complexion, hurried respiration, frequent pulse, and absence of milk, too surely indicated internal disease, notwithstanding the freedom from pain and tenderness, and the natural condition of the abdomen. Bleeding, and even leeches, were forbidden by the entire absence of pain, of heat and dryness of surface, and by the softness and weakness, ("gaseous condition,") of the pulse. The mercurial practice was therefore adopted; the bowels being kept open by enemata, and once by the exhibition of senna infusion—but this last proved irritating and injurious. No decided benefit resulted from any measure adopted; the frequency and weakness of the pulse increased, as also the sense of exhaustion; bilious vomiting ensued; prostration followed, and death occurred on Monday, March 4th, the seventh after delivery, and the fifth after the occurrence of the chill. During the whole period of her illness, with the exception of the slight colicky pains on the 28th, she experienced no pain, and had no tympanitis. Even on Sunday, the 3d inst. my colleague, Dr. Lukens, who had seen much of this complaint during the endemic of 1830–1, regarded the size and feel of the abdomen as perfectly natural—the uterus could be embraced by the hand, and moved from side to side without producing uneasy sensations. Nevertheless, post mortem, every evidence of inflammation coëxtensive with the peritoneal surface, was exhibited even to the formation of new membranes. The uterus was perfectly healthy, as also its veins, many of which were laid open.

Could this female have had peritonitis before her confinement, relieved by the antiphlogistic remedies adopted, but again fatally aggravated by the parturient state?

During the progress of this case, another patient was delivered, March 1st, in the same room, who afterwards suffered from severe bilious symptoms, some fever, and much subsequent debility, but recovered without any characteristic symptoms of peritonitis.

On the death of E. Lehy, the former ward, in the centre building, was again occupied, as change of place was ineffectual, and suitable measures for purification had been employed for twelve days.

Case III. M. Viney, an intemperate female, who, however, had been exceedingly benefited by a temporary residence in the building prior to her confinement, was delivered March 1st of her first child. She manifested on the second day many of the peculiar symptoms of peritonitis, particularly pain, frequent pulse, and foul tongue. Pulse however had no tension. She readily recovered under the influence of calomel, leeches, low diet, and moderate revulsives. Vide Case III. Another patient was confined in this room who did well.

Case IV. C. Borstall, a healthy woman, was delivered in the same ward, of her first child, on Wednesday, March 6th. She continued remarkably well, free from pain and fever, with a good appetite, excellent spirits, and an abundant flow of milk during the remainder of the week. Before daylight, however, on Sunday, March 10th, she suffered from symptoms indicative of intestinal irritation,* pulse not being over 100, milk and lochiæ continuing. Was relieved by 100 leeches to the abdomen, anodyne enemata, &c. As precautionary measures, Dover's powders with calomel were exhibited every two hours. In the evening, although free from pain and tenderness, and having no purging, her tongue was found dry in the centre; pulse and other indications favourable; oil was given. Towards midnight, having some fever, was freely bled, even to faintness; oil operated; felt better; her pulse still rather frequent, and tongue sometimes dry in the centre.

Monday the 11th, seemed much better; but on the 12th and 13th, although there was no pain on pressure, and no swelling, yet had occasional griping and sometimes a little mucous purging; pulse being rather more frequent. Fever appearing, was again bled. Next day, Thursday the 14th, pulse 120; tongue furred, dry line in its centre, and milk and lochiæ diminished. Although there was an entire absence of pain even on pressure, and of swelling, yet I had little doubt, that we had again peritonitis to contend with—perhaps complicated with colitis, but the pulse had become worse under evacuations, more frequent and weak; skin moist, clammy, and disposed even to be cold; mercurials were prescribed, but as the respiration was becoming short, and the exhaustion great, had to give wine-whey in the evening.

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* Vide Case IV. in Hospital Reports.

Friday, the 14th.—Symptoms were very bad; great prostration; hurried respiration, &c. but still no pain in abdomen; neither did she experience any during the whole course of her disease, but would frequently say, when pressure was made, "If there be no pain, you will produce it by your punching." System reäcting under stimuli, the mercurial plan was now more vigorously pursued.

On the 17th the intestinal excretions indicated the influence of mercury, and the gums and tongue were slightly inflamed with some ptyalism but no mercurial fœtor. As no very decided influence had been exerted by the mercury, it was continued a day longer; the patient became weaker, mind wandering, and pulse more frequent and weak, still no mercurial fœtor; gums, tongue, &c. became ulcerated as in aphthous affections, with little swelling or ptyalism, and no tumefaction of the cheeks or glands. She now complained, Monday the 18th, of soreness and great pain in forearms, the muscles of which were swollen and even rigid. Mouth became more ulcerated; the prostration increased, so that death ensued on the 20th inst. fourteen days after delivery, and the tenth of her illness—the most protracted case which occurred.

Although this female had never suffered from abdominal tenderness, her pain being always spasmodic, not aggravated or excited by pressure, and although there had been no tympanitis, and but slight fever, and the symptoms indicated irritation of the mucous membrane, rather than of the peritoneum, nevertheless, *post mortem*, all the abdominal viscera were found in a healthy condition; natural fæces existed in the large intestines, and the biliary and other fluids appeared healthy, while the peritoneum bore marks of extensive inflammation, even to the formation of new membranes and of large quantities of purulent matter in the cavity of the abdomen. The uterus and its veins were free from marks of disease.

Case V. During the progress of the preceding case, a rapid and melancholy instance occurred in the same ward. Harriet Pitney, æt. 33 years, an English woman, of good but not robust constitution, was confined with her second child early Monday, March 11th. That day, no indications of disease, nor on Tuesday, her milk appearing, apparently in sufficient quantity for her infant. On Wednesday was informed she was doing well, but on examination found her skin more pallid than usual; lips bluish, and face mottled; tongue yellowish at root; pulse 120, soft, rather full, and compressible; respiration frequent; surface of body natural as to temperature and moisture; some milk in her bosoms, and lochiæ of a good colour and quantity; there was no tympanitis, and patient said she was doing well, not complaining of any pain; but pressure over hypogastric and iliac regions excited pain. One hundred leeches were applied to the abdomen, the pulse, &c. forbidding V. S.; and ol. ricini was administered, as her bowels had not been moved since delivery. This was at noon. The leeches were followed by a slight chill, faintness, nausea and vomiting, but the soreness on pressure was relieved. Dover's powder and calomel were given; diet absolute.

Thursday, the 14th, had a comfortable night, but symptoms worse; pulse weaker and more rapid; respiration more hurried; the blueness of lips more decided; milk and lochiæ nearly gone, and the pain on pressure returned; turning in bed now excited pain; still little swelling of abdomen. Calomel was freely given, and one hundred leeches again ordered with revulsives to the extremities, &c. These again afforded partial relief to the local affection, but general symptoms were aggravated. Bowels opened by an injection—stools natural. Powers of system continued gradually to sink, and the local irritation, as indicated by pain on pressure, and the occurrence of slight tympanitis, with restlessness, &c. rapidly increased in extent and severity. On the succeeding day, stimuli could no longer be withheld, and seemed for a time to be useful, but prostration and death followed early on the 16th, the sixth day after delivery, and the fourth after the first indications of disease were detected. Post mortem, all the consequences of decided peritonitis were detected. See details, Case V.

Another female was delivered the same night with Mrs. P. and for three days was in the next bed to her. She suffered from some bilious symptoms, but had no inflammatory affection, and did well.

Case VI. The next patient was Mary A. Munhollan, a young and delicate female, who was admitted into the house on the 5th of March, suffering from bronchitis and colitis. For some weeks previously, she had dysenteric stools, occasionally with blood, and for a few days a troublesome cough from exposure and neglect. There was no fever on admission, and the symptoms not very severe. The irritation of the bowels was apparently relieved by demulcents, anodynes, chalk, &c. and her cough was better under the same course of treatment. Labour ensued Wednesday, March 13th, when she was not more than seven months advanced. It was a case of compound pregnancy—twins being born, but so feeble that they survived but a few hours. The mother complained of weakness; skin very pallid; but with the exception of after-pains, which were severe, she appeared well on the 13th and 14th. Towards evening of this last day, Thursday, her skin became hot and dry, and tongue furred, but no pain on pressure, and lochiæ continued. Mammæ, however, did not swell. Calomel and oil given as a cathartic.

Early in the morning some tenderness detected in the uterine region; pulse had become 120, but soft, rather full and weak; no milk; lochiæ diminished; respiration rather short; bowels not opened. Gave Epsom salt, and twenty foreign leeches, (equal to one hundred American,) were applied over the iliac regions. No relief, but restlessness increased. Warm fomentations, spirit of turpentine to hypogastric region; calomel in small and repeated doses, (gr. ij. q. s. h.) Bowels were opened at noon, with much temporary relief as regarded the sensations of patient and the restlessness; her cough now returned, and demanded anodynes, while her pulse became weaker and more frequent.

Saturday, the 16*th.*—Pulse now quite feeble, and more frequent; skin pallid; lips bluish; no febrile heat; soreness and pain on pressure rather greater, and was felt in the iliac regions—not in the upper portions of abdomen; mammæ flaccid; lochiæ nearly gone; lies most comfortably on her sides. In this condition, ventured on account of the local irritation to reäpply the leeches, fifteen in number, to the abdomen, but with no apparent advantage. For reasons hereafter to be detailed, it was now determined to apply ice to the abdomen, and warmth to the extremities; and internally, to continue the calomel. In the evening, she expressed gratification as to the influence of cold; it rendered her far more comfortable than "*the hot things*," but complains of the purging as distressing in every way. Combined morphia with the calomel.

Sunday, the 17*th.*—Still some purging, but symptoms not aggravated, indeed better; pulse now 128; less tenderness and soreness; ice grateful, although the skin of the abdomen feels as cold as the ice on its surface. Continued the mercurials and anodynes, and directed nutritious but simple diet, with wine to support her vital powers.

In the evening, purging continuing, mercurial frictions were substituted for the calomel. During the night bilious vomiting came on, which, with the purging, aggravated the exhaustion, so that on the 18th inst. (Monday,) symptoms of sinking became very decided; the cold was removed, stimuli were given, but generally rejected, and death ensued by 4 P. M., the sixth day after delivery, and the fourth day after the occurrence of febrile symptoms.

Post mortem.—The evidences of inflammation were much less extensive than in any of the preceding cases; red dots could be observed on the middle and lower portions of the peritoneum, but the lymphatic effusions were found only in the iliac and hypogastric regions. The heart was in a state of hypertrophy, but not enlarged; the walls, however, of the left ventricle were nearly double their natural thickness—its cavity being of course greatly diminished.

Case VII. Sarah M'Guigan was delivered on the same day, Wednesday, as the preceding female. On the 14th, appeared to be doing very well, but her tongue was yellowish and furred. On the evening of the 15th, had some pain in region of the uterus; tongue continued coated; no fever: pulse 90; milk did not appear in her breast. An active mercurial cathartic, (of calomel and oil,) was given.

Next day, had two bilious stools, but symptoms much the same, except that the pain was diminished, and the pulse was more frequent, being 120; skin moist; some milk in breasts. Gave calomel, gr. x. and opii, gr. ss. This, with the assistance of an enema, caused free evacuations from the bowels. On the 17th, milk and lochiæ increased, but tongue is still furred, and pulse 120. Repeated cal. and op.; this was followed by an enema with advantage.

This patient being free from fever and pain, with a natural, moist skin, healthy expression of countenance, and moderate secretion of milk, nevertheless maintained for several days the fur on the tongue, with little appetite, and the frequent, full, and soft pulse. After the mercurial medicines had been given as above detailed, she was trusted to rest and low diet. She recovered.

The last cases having occurred in rapid succession, it was determined that all the patients yet to be delivered, should be removed to private lodgings. Several of these have been confined without any indications of peritonitis. One patient, however, on the eve of departure was taken in labour.

Case VIII. Margaret Sullivan was delivered at 11 A. M. Saturday, March 16th. She continued comfortable until early Monday, the

18th—milk appearing in her breast on the 17th. On Monday morning was feverish, and complained of some pain in back. Was bled to ℥xv. and took sp. nit. dulc. The expectation was entertained of its being merely the milk-fever; but at 9 P. M. there was tenderness and even pain on pressure over the uterus; pulse 120, with some tension: V. S. ℥xxiv. induced faintness; Dover's powder and calomel were given; fomentations, &c.

Tuesday, 19*th*.—Slept well; milk abundant; lochiæ not quite so copious as before; has still slight tenderness on pressure; pulse 112; had one hundred leeches to groins and hypogastric; Dover's powder and calomel. *Noon.* Pulse 120; tenderness on pressure diminished.

For subsequent history see details, Case VIII. by which it will appear that the milk and lochiæ diminished exceedingly; patient on the 20th became very pallid, and pulse so weak and frequent, 138, that quinine and nourishment were required. Bowels became disordered, to the exhaustion and distress of the patient, the stools were bilious and watery, and the pulse for several days remaining very frequent. Eventually the symptoms of intestinal irritation disappeared, under the use of anodynes and revulsives with chalk, and finally, the rhatany, which last appeared to be very useful in checking the exhausting evacuations, and supporting the general strength. The mammary secretion now returned, and the pulse very gradually became slower; the patient eventually recovered, but was for many days very weak, and her stomach and bowels exceedingly irritable.

I have lately seen her looking pallid, and complaining of occasional uneasy sensations and swelling about the abdomen, apparently from indigestion, but with a free supply of nourishment for her healthy infant.

The wards of the lying-in department were now closed for some weeks.

The following table presents a summary view of the cases detailed. It appears that four of the eight patients were primiparous, and that the average interval between delivery and death in the fatal cases, was 7.2 days. In most of the patients, the disease probably commenced on delivery, but in Cases IV. and VIII. the period of attack was well marked on the day noted. There occurred eight cases, of which five were fatal.

In the endemic of 1830 and 1831, from a statement furnished me by Mr. Malin, it appears that there were thirteen deaths; the average interval between delivery and death being precisely seven days; the shortest interval was three days—the longest ten days.

TABLE II.

Case.	Name.	Age.	Number of labours.	Day of delivery.	Day of apparent attack.	Day of death.	Recovery.	Interval between day of delivery and death.
1	Margaret Riley	32	1	Feb. 12	Feb. 15	Feb. 17		5 days
2	Ellen Lehy - -	26	3	26	Mar. 1	Mar. 4		7 days
3	Martha Viney -	32	2	Mar. 1	2		Recov'd	
4	Catharine Borstall	30	1	6	10	20		14 days
5	Harriet Pitney -	33	2	11	13	16		5 days
6	Mary A. Munhollan	21	2	13	15	18		5 days
7	Sarah M'Guigan	21	1	13	15		Recov'd	
8	Margaret Sullivan	27	1	16	18		Recov'd	

The great fatality of puerperal peritonitis, whether appearing sporadically or epidemically, in private or public practice, is well known. When endemic in hospitals few patients recover—not unfrequently almost every individual perishes. This mortality no doubt partially depends on the predisposing causes, of which, as already acknowledged, we are very ignorant, but which are evidently more influential in hospitals, and other similar situations, and modify, in a most important manner, the symptoms and progress of the disease, as I shall attempt to demonstrate, rendering similar modification in the treatment essentially necessary. The very nature of puerperal fever, being an acute inflammation of a most irritable and extensive serous tissue, spreading over its whole surface with great rapidity, is alone sufficient to account for the severity of the disease, especially when it is remembered that it occurs at a moment when the female system is always preternaturally irritable.

On ordinary occasions, the well known local and general symptoms of inflammation are manifested, so that no doubt remains, as well of the nature of the affection, as of the proper remedies, but when endemic in hospitals, its apparent character is changed—diagnosis is difficult, and the anxious physician, alive to all the responsibilities of his situation, finds the most efficient antiphlogistic remedies unavailing, and even positively injurious in a disease essentially inflammatory. The following circumstances may be mentioned as more or less peculiar in the cases under consideration.

1. The disease was not ushered in by any decided chill, often no cold sensations were experienced; and the subsequent phenomena render it probable that inflammation generally commenced on delivery, although no symptoms were detected before the second or third day.

2. The almost entire absence of fever, that is, of a hot, dry skin, dry tongue, and other indications of the stage of excitement; the surface being usually pallid, with a livid tinge of the lips, cheeks, tongue, nails—also moist, and natural as to temperature. There were some exceptions to this remark, but the observation is correct as regards the most acute cases of the complaint—Case V. Pitney's; Case VI. Munhollan's.

3. The pulse was never corded nor tense. The last patient, Case VIII. Sullivan, had slight tension of the pulse, but not to such a degree as on ordinary occasions to render the lancet essential. In all cases the pulse was at first rather large, soft, and compressible, not calling for, and even forbidding depletion; it was invariably frequent, at once rising to 120, and often could not be numbered towards the termination of the disease.

4. The respiration was much hurried; in one patient, Case II. this was remarkably the case; like that of a person agitated, or exhausted by severe exercise. Connected with this, there were generally, almost universally, a disposition to blueness of the lips, and other evidences of imperfect hematosis.

5. Perhaps, however, the greatest peculiarity of this epidemic was the slight degree of pain experienced. Riley, Case I. suffered the most; yet on the first day she made no complaint of pain; on the second, suffered only when bowels were moved; on the third, had severe pain, but it was completely relieved by V. S. and leeches; on the fourth, it returned and extended to the joints of the extremities, and was greatly aggravated by pressure. In no other patient was pain a prominent symptom; in some it was only produced by pressure, or by motion; and in two patients, Lehy and Borstall, no pain whatever was experienced, nor any tenderness on pressure during the whole course of an acute peritonitis!!

The tympanitic condition of the intestines was much less than usual, particularly in those cases in which there was little or no pain.

6. The almost universal existence of a furred and yellow, ("bilious,") tongue, indicative of visceral disorder, should perhaps be mentioned as a peculiarity. It was found in all the severe cases, and in nearly all who were delivered during the prevalence of the complaint. This derangement of the digestive functions, conjoined with a very irritable condition of the tissues, seemed to constitute that state of the system or organs which predisposes to peritonitis puerperalis, and which, under other exciting causes, as wounds, fractures, &c. gives rise to erysipelas. If so, the frequent conjoint

prevalence of puerperal fever and erysipelas is, in some degree, explained—their predisposing causes being the same.

7. The secretion of bile after the first few days became excessive, and appeared to be the exciting cause of the diarrhœa and vomiting, which were injurious and exhausting. Whether this increased secretion of bile depended on the disease, or on the measures adopted, particularly the exhibition of mercury, or on both, is a question not easily answered.

These peculiarities will explain the difficulty of diagnosis—the inefficiency of the established modes of treatment, and the consequent fatality of the disease.

1. *Difficulty of diagnosis.*—It may be safely asserted, that without the assistance of morbid anatomy, the nature of this disease would have been altogether inscrutable. What practitioner, however experienced in clinical observations, but ignorant of what the scalpel has revealed post mortem of the consequences of this affection, would have suspected a most rapid, acute, and extensive inflammation, involving the whole surface of the irritable and sensible serous membrane of the abdomen, when his patient complained merely of weakness; had no pain, nor even tenderness on pressing and handling the abdomen; no tympanitis; no purging; no dryness nor heat of surface; no tension nor quickness of pulse? The fact that authors have alluded to such cases, would afford but little assistance to the practitioner. In the case of Lehy, for example, the symptoms of disease were imperfect hematosis; rapid respiration, and great frequency of pulse, with diminution of the lochiæ; want of mammary secretion and great sense of debility; symptoms sufficiently decided to indicate dangerous internal disease, but whether of serous or mucous tissues in the abdomen or the thorax, are points which could not be positively determined. The last-mentioned symptoms however, judging from what occurred at the hospital, should, under similar circumstances, be considered as proof of the existence of acute peritonitis, for death unfortunately afforded the opportunity of ocular demonstration.

2. The inefficiency of the established modes of treatment was too certainly exhibited at this period; confirming not only the experience of my predecessors in the hospital, but that also of accoucheurs to lying-in establishments generally. It may be useful to state what I believe to be the result of our experience in the different remedies employed, and then to deduce the practice which would promise most under similar modifications of peritonitis.

1. *Blood-letting.*—General bleeding was tolerated in some of the cases, particularly in the last one, Sullivan's, where there was some

tension of the pulse. It usually moderated, for a few hours, the local symptoms; but as a general observation, it was of no permanent benefit to the local affection, and was often decidedly injurious, by exhausting more rapidly the vital powers of the patient, as indicated by the increased frequency and weakness of the pulse, pallor of the surface, and sensation of weakness.

The same remark was often applicable to leeches, as always moderating, and in one instance, Viney's, apparently subduing the local symptoms, but diminishing the general strength, so that the local affection appeared to spread with much more rapidity. In one case, Munhollan's, no relief was afforded, and the patient complained of being more uncomfortable. On the whole, leeches proved useful, but the evacuation of blood in whatever way effected was injurious when the pulse was rendered softer and more frequent. "As salutary as these evacuations may prove in such cases, (of sporadic peritonitis,) exactly in the same ratio do I consider them injurious in epidemic peritonitis, especially in hospitals—peritonitis from internal causes. In this latter case, so far from procuring relief, they are ordinarily followed by great frequency and smallness in the pulse, a more evident alteration of the features and increased swelling of the abdomen."* Exceptions occurred to this rule of Baudelocque's, but none which would not confirm the observation that sanguineous evacuations are injurious when the pulse does not sanction their employment.

2. *Emetics* were employed occasionally to relieve the stomach of any irritating ingesta, food, bile, &c. but were not relied upon as the efficient means in the management of the disease.

3. *Purging*, as a plan of treatment, failed entirely: in all cases, whether excited spontaneously, or by medicine, it was very distressing and exhausting to the patient, with no apparent amelioration of the symptoms. At the commencement, however, laxatives or enemas to empty the bowels were grateful and beneficial.

4. *Diaphoretics* were of no utility—indeed the patient often perspired with even a natural temperature of the skin, and yet experienced no relief.

5. *Mercury.*—Much was anticipated from the use of this medicine, so valuable in inflammatory affections, especially of serous tissues. Hence, next to blood-letting, our main dependence was placed on its free exhibition; it was resorted to in every case, but on review, I cannot affirm that any good was effected, and perhaps it was even

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* Baudelocque, Jr. on Puerperal Peritonitis, p. 346, of Amer. Edition.

positively injurious. Salivation could not be induced: even in the comparatively protracted case of Borstall, where mercury was early, freely, and perseveringly employed, no genuine ptyalism was excited. An aphthous ulceration of the tongue, lips, &c. occurred without swelling of the face, ulceration of the gums, or any inflammation of the salivary glands, and without any mercurial fœtor. The patient appeared to sink more rapidly from this extensive irritation, and from the severely painful affection of the muscles of the forearm, which may possibly have been dependent on the mercurial influence. In Munhollan's case, which was fatal, and in Sullivan's, which was one of recovery, the great distress was from purging of bilious and serous fluids, apparently from the use of calomel; indeed, in all cases, it was disposed to act on the secretions of the abdominal viscera, rather than on the mouth, and had no influence in moderating the disease. Was the increased bilious evacuations in the latter stages of the complaint owing to the inflammation, or the mercury?

6. The *oil of turpentine* was tried, but always excited vomiting, and was therefore abandoned.

7. *Revulsives.*—Fomentations and poultices to the abdomen, extremities, vulva, and mammæ; hot pediluvium; oil of turpentine to body and limbs; warm and mucilaginous injections into vagina and rectum; blisters to the extremities and sometimes to the abdomen, were severally employed, and generally with advantage as secondary remedies. Moist heat, however applied, was generally grateful; but of course had, in so severe a disease, no very decided influence. The blisters were often detrimental by increasing the restlessness of the patient, and preventing sleep. Nothing seemed to be gained by attentions to the mammæ; the application of plasters and poultices or of the child, did not seem to retard the secession of the milk; as the patient was disturbed by the infant, it was soon withdrawn.

8. *Tonics and stimuli* were usefully employed, but not with any idea of curing the disease as has been mentioned, but on another principle presently to be indicated.

9. *Cold.*—The great disappointment experienced in not being able to resort freely in this acute form of peritonitis to general and local bleeding, and in the efficiency of other remedies, early induced me to think of ice to the abdomen as the most promising means for arresting this terrible disease. To this practice I was led by principle, and by experience in analogous affections. For several years, I have taught at the Philadelphia Medical Institute, that the direct influence of cold is universally sedative, as respects the organic actions, to internal as well as to external capillaries, maintaining that cold applied

to the skin does not determine the blood directly to the internal capillaries, but on the contrary, that the same condition of the capillary tissue is induced internally as well as externally, differing merely in degree. It may be useful to add, that the prominent facts on which this opinion of the modus operandi of cold is founded, are its acknowledged and powerful influence in moderating and arresting internal as well as external hæmorrhages; and also the decided benefit so universally experienced by its employment in many deep-seated inflammations of the limbs, of the brain, &c. when of the most acute character. Why then should it not be equally useful in acute peritonitis? I could not detect any satisfactory objection, but on theoretical views, and from experience in all analogous affections, I felt strongly inclined to use it freely and boldly. To this I was still further encouraged, not only by the failure of established modes of treatment, but by the accounts given of two cases of recovery in the Journal of the Royal Society of Medicine of Toulouse in 1827,* where ice was applied, and by the reports of several practitioners in favour of cold cataplasms, cold affusions, &c. In consultation, therefore, with my colleague, Dr. Lukens, it was agreed to employ ice in the next case that appeared suitable. That no bad consequences should result, if possible, from its employment, it was not resorted to until the symptoms were decided, until it was evident that sanguine evacuations could not be further employed, and until the lochiæ and the mammary secretion had ceased. These circumstances existing in Case VI., Munhollan's, ice in cloths and in bladders was applied to those portions of the abdomen which were tender on pressure, while dry heat, blankets, &c. were directed to the extremities, and calomel was freely exhibited with the views already explained. The result was not positively for or against its employment, but to me it was decidedly encouraging; for although the patient died as speedily as in the other cases, yet she was naturally of a delicate constitution, had been the subject of dysentery and bronchitis before and during her confinement, was delivered prematurely of twins, and was at the time the ice was applied much exhausted, (pulse being 144 and very weak,) by the disease and by the leeches, which last appeared to be injurious to the local as well as general symptoms. She had also hypertrophy of the left ventricle of the heart. The ice was agreeable to her feelings, far more so than the turpentine and other revulsives previously employed; it contributed greatly to the relief of her restlessness; moderated the local symptoms, and apparently arrested the progress of the inflammation; for, if any correct judgment could be formed from the symptoms, particularly the tenderness on pressure, before and after its application, of the extent of the inflammation, it did not extend on the peritoneum after resort to the ice. *Dissection exhibited a more circumscribed inflammation than in either of the other fatal cases;* the effusion of lymph, &c. being confined to the lower portion of the abdomen, but in the other cases was found over all the viscera, liver and stomach not excepted.

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* Vide North American Medical and Surgical Journal, vol. vi. p. 198. Archives Generales, vol. xvi. p. 136. Baudelocque on Puerperal Peritonitis, p. 400. Am. Ed.

Was not this patient also injured by the calomel, which kept up a distressing purging, and excited no affection of the mouth and salivary glands?

These observations certainly do not afford much encouragement in the treatment of peritonitis puerperalis as modified by epidemic causes, but by exhibiting the difficulties of the case may lead to a more scientific and efficient mode of treatment.

Puerperal fever in the Pennsylvania Hospital was manifestly an acute inflammation of the peritoneum, conjoined with derangement of the chylopoïetic viscera, and occurring in individuals whose systems were preternaturally irritable, and whose vital powers immediately yielded to the severity and extent of the local inflammation.

The important and essential indication is to subdue the local disease, but its fulfilment was rendered fearfully difficult by the prostrated condition of the system. Hence, as frequently intimated, sanguineous depletion, purging, and other antiphlogistic remedies were often detrimental, although temporary relief might be afforded. The general principle I would therefore deduce, is that the vital powers should not be enfeebled under the expectation of curing the local inflammation. If, therefore, the pulse becomes more irritable and frequent from the loss of blood, such evacuations should be abandoned, however apparently useful in moderating the local symptoms, and measures for supporting and invigorating the powers of life, be adopted. This I believe to be a principle of very universal application, but too often, especially at the present day, forgotten—for practitioners, from a laudable desire to overcome the local inflammation, the origo malorum, not unfrequently sacrifice the general strength of the patient.

Antiphlogistic remedies have seldom any other effect than simply to diminish, by a direct or indirect influence, the morbid excitement; the alteration of action, the change from a diseased to a healthy state, is effected almost exclusively by the natural powers of the economy, and demands therefore that a certain degree of power should be preserved—patients may be rendered so weak that very slight local disease may destroy them. Surgeons are familiar with these principles, and daily act upon them in the management of suppurating wounds, compound fractures, &c. of long standing, often employing stimulating measures, locally as well as generally.

In all doubtful cases, the first evacuation of blood, if the pulse do not forbid the trial, should be tentative, as advised by Baudelocque, Jr. If the pulse acquire increased volume and tone, and become slower, the evacuations have been useful, and may sometimes be advantageously and even freely repeated. All direct depletion, however, must be effected within the first few hours; evacuations afterwards can seldom be tolerated, but moderate nourishment, tonics, and even stimuli, are demanded, that the patient may not sink from the local affection. These invigorating measures do not apparently augment the local affection.

Sanguineous evacuation being forbidden, or having been carried as far as practicable, the patient must be trusted to local antiphlogistic remedies, operating as sedatives or revulsives, with appropriate attentions to the general system. Judging from the few cases above detailed, and for reasons already advanced, I would prefer the sedative influence of ice to the abdomen as more promising than any other measure hitherto recommended. It certainly deserves a more enlarged and decided trial, having been apparently successful in some few cases on record—being more grateful to the sensations of the patient, and certainly exciting a more powerful influence, whether for good or evil, than any other measure at command. In using it, moderate warmth should be preserved in every other portion of the surface, the bowels be kept at rest by anodynes, the general strength supported by simple unirritating food, tonics, or even stimuli; and any occasional or accidental symptom be appropriately attended to. Should circumstances forbid the use of ice, revulsives alone remain at our command, and should then be resorted to decidedly: a blister to cover the whole anterior and lateral portions of the abdomen can alone be adequate to the emergencies of the case; small blisters are inadequate as revulsives, and probably produce as much general distress as the large one over the abdomen. Although my confidence in mercury is destroyed as a remedy for peritonitis, it perhaps should not be entirely abandoned, as in small and repeated doses with opium, so as to prevent any cathartic effect, it may correct the derangement of the chylopoïetic viscera, the integrity of whose functions is so exceedingly important in maintaining the vital powers of the system.

Bleeding, general and local, regulated entirely by the condition of the pulse, especially as regards tension, with the constant application of ice to the abdomen, appear, therefore, to be the most promising remedies for puerperal peritonitis under the direction of a well-instructed and attentive practitioner.

The details of the cases at the hospital, as preserved by Mifflin Wistar, M. D. the house-physician in attendance, are appended, that all the facts may be presented to the profession.

Case I. Margaret Riley, aged about twenty-three years, was delivered, after a healthy labour, of her first child, February 12th, 1833. On the 13th, as she had some fever and a furred tongue, she took a dose of magnesia.

14th. Medicine has operated freely, and she is now doing well in every respect.

15th, about 3 *P. M.* She was found complaining of great pain and tenderness on pressure over the abdomen; pulse very frequent; bowels have been opened several times during the last half hour. She was immediately raised up in bed and bled till she became faint, and four hours afterwards sixty leeches were applied over the abdomen. Her abdomen was also bathed with warm sweet oil, laudanum, and spirit of turpentine.

9 *P. M.* Feels very comfortable.

16th. Tongue dry and very red; great thirst; stomach very irritable; belly more tumid, especially about the epigastrium; no stool since yesterday afternoon; secretion of milk and the lochial discharge are almost suspended. Was directed, Calomel, gr. ¼, Sulph. morphiæ, gr. 1-12, every hour; lime water and milk to be given occasionally, and a blister 6 × 7 inches to be applied to the epigastrium.

3 *P. M.* Pulse 120; great thirst; skin moist; abdomen most tumid about the umbilicus; great tenderness on pressure, especially over the uterus; she complains of very severe darting pain, and has become very anxious about her situation. Directed a mustard cataplasm to be applied over the hypogastrium, to take the cal. and morphia every half hour, and ʒss. spt. nitri dulcis every hour. She was also allowed to hold small pieces of ice in her mouth, which proved very grateful to her.

6 *P. M.* Tongue more moist; pulse 135; complains of difficulty in passing her water. Directed Cal. gr. i., Sulph. morph. gr. 1-6, every half hour—suspending the use of the pills before mentioned. She was permitted to drink mineral water containing small quantities of sup. carb. soda. An injection of Oss. of cold water was also given.

9 *P. M.* Tongue continues moist; pulse 108; lochial discharge and secretion of milk are entirely suspended; has frequent hiccup; bears pressure over the abdomen much better than in the morning. Continue treatment.

17th, 6 *A. M.* During the night a blister was applied to each ankle; she slept well; has passed Oj. of urine, and now perspires freely; pulse very weak.

9 *o'clock.* Swelling of the abdomen increases; skin cold and clammy; mind sensible. Was directed to take every hour ℥ss. of the following mixture:—℞. Spt. terebinth. ℥ss.; P. G. Arab. ʒij.; Sacch. alb. ʒi.; Aquæ, ℥vss. She was

also stimulated with wine whey, capsicum, &c.; rub her limbs with whiskey and turpentine.

Noon. Pulse barely perceptible; mind rational.

She died at 3 P. M.

Examination twenty-one hours after death.—On opening the abdomen we found universal peritoneal inflammation, which was very great on the posterior surface of the uterus; the peritoneum covering the anterior surface being less inflamed. The cavity of the abdomen contained a copious sero-purulent effusion, with flakes of lymph floating in it. The substance of the uterus was in a healthy state, but on opening its cavity we found a purulent fluid. The left ovary was very much softened, almost in a state of disorganization; the right one was healthy. The stomach and intestines were healthy; the latter containing natural fæces.

Case II. Ellen Lehy, aged twenty-six, was delivered, February 26th, 1833, after a healthy labour, of her fourth child.

27th. Pulse frequent; tongue coated with a white fur; no unusual tenderness on pressure being made over the abdomen; very little milk; lochia as great as usual.

28*th.* Same as yesterday.

March 1*st, about* 4 *A. M.*—She became feverish, and very restless; she stated that about half an hour before she had a chill. She was immediately bled to syncope, and was directed the neutral mixture with small quantities of sulph. morphia.

2*d.* Pulse 120; tongue heavily furred; lochia very slight, but less offensive than yesterday; secretion of milk nearly suspended; skin moist; mind more composed. Directed Calomel, gr. ij., opii, gr. ¼, every two hours; injections of tepid barley water into the vagina; a poultice of bread and milk to each breast, followed by a plaster of cerate, in hopes of facilitating the secretion of milk, and a blister to each ankle.

11 *P. M.* She perspires freely; no tenderness on pressure being made over the abdomen.

3*d*, 7 *A. M.* Has slept well; pulse 120; tongue furred. Directed the common injection.

9 *A. M.* Pulse 120; the injection brought away very little fæcal matter; much flatulency. Directed a wine-glassful of the following mixture every two hours, alternately with the pills above mentioned.—℞. Fol. sennæ, ℥ss.; Pulv. rad. zingib. ʒij.; Aquæ, Oiss.; Inject barley water into the vagina every three hours; she states that it affords her great relief.

Noon. Soon after commencing with the senna tea she began to vomit, the discharge being copious and very bilious. Directed lime water and milk; small pieces of ice to be held in the mouth.

5 *P. M.* Within last hour her pulse has become more feeble; skin cold; vomiting, which had been relieved, has now returned with great violence. Directed Pulv. ipecac. ℈j. which in half an hour produced copious bilious vomiting, after which she experienced great relief. The retching continuing, a pill composed of opium, gr. j. was given alternately every half hour with sup. carb. soda, gr. v. The clove tea was also resorted to, and a mustard cataplasm applied over the epigastrium.

10½ *P. M.* Vomiting returns at intervals; very little tenderness on pressure being made over the abdomen. Discontinue the opium, of which she has taken gr. vj., and let her take sulph. morphia, gr. ¼. in solution, repeating in half an hour; apply a blister 5 × 6 inches over the epigastrium.

4th, 5 A. M. During the night her strength failed so much as to render it necessary to resort to carb. ammon. and wine whey, brandy punch, &c.; she is now delirious; pulse very feeble.

8 *A. M.* Pulse almost imperceptible. Directed sulph. quinine, gr. j. every half hour.

She died at 1½ P. M.

Examination eight hours after death.—The whole surface of the peritoneum was highly inflamed, especially on the posterior surface of the uterus. Lymph had been thrown out so freely as to form in many places for several inches in length a false covering for the intestines. The substance of the uterus was healthy, as were also the ovaries. The mucous surface of the stomach, with the exception of small patches of inflammation near the pylorus, exhibited a healthy appearance. The intestinal canal was filled with a dark-green fluid. The cavity of the abdomen contained a sero-purulent fluid similar to that met with in the former case.

Case III. Martha Viney, aged twenty-two years, was delivered of her first child, March 1st, after a very healthy labour.

2d, about 9 *A. M.* I was called to see her, and found her complaining of a general feeling of uneasiness; pulse 110; tongue coated with a white fur; no tenderness on pressure being made over the abdomen. Directed a mustard pediluvium, to be used in a recumbent posture; a warm poultice to each breast, and to take Calomel, gr. v., opii, gr. j. immediately.

3d. Has slept well; pulse 110; tongue furred; abdomen tender on pressure, especially over the uterine region. Directed Calomel, gr. v. to be followed in three hours by an ounce of castor oil. Bathe the abdomen with warm laudanum, &c.

Noon. Abdomen more tender. Apply one hundred leeches over uterine region.

6 *P. M.* Much easier since the application of the leeches. Directed Calomel, gr. ij., Pulv. Dover. gr. v. every two hours until she sleeps.

4th. After taking two powders she slept well during the night; pulse 110; tongue furred; very little tenderness on pressure being made over the abdomen; milk and lochia, which for the last thirty-six hours have been very deficient, are now fast increasing in quantity. Apply a warm covering of cerate to each breast in order to facilitate the secretion of milk.

5th. Pulse 100; tongue cleaning; milk and lochia both increased in quantity; skin is dry. Directed Spt. nitri dulcis, ʒj. every two hours.

6th. No tenderness on pressure over the abdomen; pulse 96; tongue cleaning; milk increasing in quantity; lochia less. Directed nitre to be continued, and an injection to open her bowels.

7th. Pulse 90; in other respects same as yesterday. Directed Elix. vitriol, gtt. xij. twice a day.

9th. Gradually gaining strength.

18th. Doing well in every respect.

25th. Continues well.

Case IV. Catherine Borstall, aged thirty, was delivered, March 6th, after a healthy labour, of her first child.

She did well until March 10th, when, on the forenoon of that day, she began to complain of griping pains, attended with tenderness over the abdomen; tongue coated with white fur; pulse 100; milk and lochia as great as usual. Directed an anodyne injection; one hundred leeches to be applied over uterine region, and the abdomen to be bathed with warm laudanum, &c. as used in the previous cases.

2 *P. M.* Feels much easier. Directed Pulv. Doveri, gr. x., Calomel, gr. ij. every two hours.

6 *P. M.* Tongue inclined to be dry in the centre. Discontinue powders; let her take castor oil, ℥j.

10 *P. M.* More fever; medicine operating freely. Was bled until she became faint, which occurred after the loss of ℥xx. of blood.

11*th.* Much better.

12*th,* 7 *A. M.* No change in her pulse; but she states that she felt much more comfortable; oil produced several evacuations during the night. Directed an anodyne injection.

13*th.* Pulse 110; tongue furred; very little tenderness over abdomen. Directed a dose of magnesia, to be followed after it has operated by an anodyne injection.

Noon. More fever. Directed v. s. ℥xiv. and the abdomen to be bathed with warm laudanum, &c.

14*th.* Has slept well; pulse 120; tongue furred; milk and lochia much diminished in quantity. Directed the following pills:—℞. Pulv. ipecac. gr. ij.; Pulv. opii, gr. ij.; Calomel, gr. xij. M. et div. in pil. No. xij. Sig. one every two hours.

6 *P. M.* No tenderness of the abdomen; pulse very weak.. Directed weak wine whey; continue pills.

15*th,* 2 *A. M.* Very restless; respiration difficult; pulse 120. Directed a blister to each ankle, and about 8 o'clock it became necessary to stimulate her with carb. ammonia, spirit of turpentine; egg and wine.

Noon. No change.

7 *P. M.* Pulse 120; tongue moister; abdomen more swelled, but not tender.

10 *P. M.* Directed Calomel, gr. iv., Sulph. morph. gr. 1-12, every two hours, instead of those before mentioned; rub Ung. merc. fort. on inside of thighs; continue stimuli, and rub abdomen with lin. saponis and spt. terebinth.

16*th,* 7 *A. M.* No change. Continue treatment.

Noon. Has had one watery stool, of a yellowish-green colour.

7 *P. M.* Pulse stronger, 120; tongue moister. Directed an injection of Oj. of cold water.

10 *P. M.* Very stupid; tongue dry. Suspend the use of calomel and morphia; rub the abdomen with Ung. merc. fort.; give her Calomel, gr. iv. every two hours.

17*th,* 7 *A. M.* Has passed a sleepless night. Continue treatment.

7 *P. M.* Bowels have been frequently opened during the day, discharges being small, bilious, and attended with considerable pain; gums are evidently

affected by the mercury. Directed chalk mixture, with sulph. morphia, pro re nata.

18*th*, 7 *A. M.* Delirious; pulse weak, and very frequent. Continue treatment.

Noon. Weaker. Directed stimuli to be resorted to more freely.

7 *P. M.* Mouth very sore; complains of general pain and soreness. Discontinue mercurial frictions.

19*th*, 7 *A. M.* Mind more rational; pulse same as yesterday. Directed poultices to the parts which have been rubbed with the mercurial ointment.

Noon. Has had a very healthy discharge from her bowels.

7 *P. M.* Much weaker. Continue stimuli.

20*th*, 7 *A. M.* Pulse almost imperceptible; complains a great deal of a general feeling of soreness over her body, especially where the mercurial ointment has been applied; mouth very sore; mind rational. Directed an infusion of red bark, to be mixed with an equal quantity of lime water, and let her take it ad libitum. As her bowels have been several times opened, (discharges watery, bilious hue,) the morphia has been resorted to in larger doses.

Noon. Has had the usual bilious vomiting several times during the morning. She died at 8 P. M.

Examination thirteen hours after death.—The peritoneum covering the posterior surface of the uterus was more inflamed than the anterior, as occurred in the previous cases. The liver had a very thick covering of lymph, especially on its right side. The abdominal cavity contained about three quarts of a seropurulent effusion. The large intestines contained healthy fæces, closely resembling in their appearance the discharges of young children. The liver and gall-bladder were in a healthy condition.

Case V. Harriet Pitney, aged thirty-five, was delivered, March 11th, after a healthy labour, of her second child.

12*th.* Doing well.

13*th*, 11 *A. M.* Found her abdomen tender on pressure, especially over the uterine region; milk very small in quantity; lochial discharge slight, but of a good colour; pulse 120; tongue coated with a white fur. Was directed an ounce of castor oil; and one hundred leeches to be applied over the uterus.

5 *P. M.* She became very faint after the application of the leeches, and vomited freely. Directed Pulv. Dover. gr. x., Calomel, gr. ij.

14*th*, 7 *A. M.* Has slept well; pulse 125; abdomen tender and more swelled; tongue coated with a white fur; milk and lochia nearly suspended. Directed Calomel, gr. x. now, and gr. x. more at 1½ P. M.; one hundred leeches to be applied over the uterine region, and a blister to each ankle.

4 *P. M.* She vomited the first dose of calomel, but retained the second; abdomen less tender; breathing freer; pulse 138. Directed a pill composed of calomel, gr. x. and the common injection.

6 *P. M.* Pulse 144. Directed Calomel, gr. v.; opii, gr. ¼. every two hours; the common injection to open her bowels; a blister to be applied to each wrist, and her abdomen to be rubbed with ung. merc. fort.

10 *P. M.* Lochia slightly increased in quantity; abdomen more tender, her bowels have been opened several times, discharges watery, of a yellowish-green colour. Apply a poultice of bread and milk to the vulva, as she states that warmth to that part gives her relief.

15*th*, 7 *A. M.* Has passed a very restless night; pulse 140; blisters have drawn well; complains of great debility; mind rational; very anxious about her situation. Directed the pills to be discontinued, and ordered wine whey and carb. ammon. and spt. turpentine, &c.

Noon. Pulse very feeble; mind sensible.

7 *P. M.* Delirious; pulse still weaker.

10 *P. M.* Directed Ung. merc. fort. to be applied over blistered surfaces on her arms and legs, and the lower half of her abdomen to be covered with a blister.

16*th*, 7 *A. M.* Pulse nearly imperceptible; delirious.

She died at 10½ A. M.

Examination seven hours after death.—The peritoneum was highly inflamed, especially over the posterior surface of the uterus, and around the liver, which places were thickly coated with lymph. Extensive effusion of a sero-purulent fluid had occurred in the cavity of the abdomen. The substance of the uterus was healthy, but its cavity contained a sero-purulent fluid. The ovaries, especially the right one, were highly inflamed. The stomach contained a large quantity of a dark-green fluid, similar to that found in Case II.

Case VI. Mary A. Munhollan, aged twenty-one, was delivered, March 13th, after a healthy labour, of twins—it being her second pregnancy.

14*th.* Doing well.

7 *P. M.* Pulse natural; tongue furred; some fever; lochia as great as usual. Directed Calomel, gr. x. to be followed by an ounce of castor oil.

15*th*, 6 *A. M.* Pulse has within last hour become much more frequent, 120; tongue coated with a white fur; no milk; lochia, very slight; some tenderness over uterine region. Directed an ounce of Epsom salt, and twenty Spanish leeches to be applied over the uterus.

9 *A. M.* The leeches have afforded but little relief; pulse 120. Directed Calomel, gr. ij. every two hours.

Noon. Bowels have been opened several times during the morning, discharges watery, and of the usual bilious hue.

3 *P. M.* Complains of coughing at intervals; pulse 138. Directed the pectoral mixture pro re nata.

16*th*, 7 *A. M.* Complains of pain in both iliac regions, especially the right; pulse 144; tenderness over abdomen increases; mind more cheerful. Apply fifteen Spanish leeches to the iliac regions.

Noon. Apply cold to the abdomen; resorting to ice as soon as she can bear it conveniently.

3 *P. M.* Bowels have been opened several times. Directed an anodyne injection.

6 *P. M.* She has derived but little benefit from the leeching; says the ice feels very comfortable, being far more agreeable than warm applications. Directed Sulph. morph. gr. ⅛. Continued pills and ice.

10 *P. M.* Directed Calomel, gr. iv. every two hours. Discontinue the calomel pills before mentioned, and give her a table-spoonful of the following mixture every two hours:—℞. Mist. neutral, ℥vj.; Spt. nitri dulcis, ʒiss.; Sulph. morph. gr. j.

17*th*, 7 *A. M.* Has slept tolerably well, but has had four watery stools. States that the ice is very agreeable to her; pulse 128; continue pills, but stopt the mixture, as it offends her stomach. During the night she took small quantities of morphia to check the purging, which gave her great pain. Directed Camphor, gr. iij. every two hours, and egg and wine; Sulph. morphia pro re nata. Continue pills.

7 P. M. Calomel has purged her several times, which was relieved by anodyne injections. Directed the cretaceous mixture, wine whey, &c. Rub the mercurial ointment on the arms and legs.

18*th*, 7 *A. M.* During the night her bowels were opened several times, and she was attacked with bilious vomiting, which we endeavoured to check by the cretaceous mixture, peppermint, and sulph. morph. She is now sinking fast. Directed wine whey, quinine, and capsicum, with brandy punch.

Noon. Owing to the irritability of her stomach, all the medicines are discontinued; she at intervals complains of acute pain over the abdomen; pulse almost imperceptible; vomiting continues; purging has ceased; mind rational. Ice was removed this morning since she complained of it. Bathe the abdomen with spt. of camphor. She died at 4 P. M.

Examination sixteen hours after death.—The peritoneal coat of the uterus, Fallopian tubes and ovaries, was highly inflamed. The cavity of the abdomen contained a dark-green fluid. The substance of the uterus was in a healthy condition. The ovaries were highly inflamed, but the phenomena of inflammation were exhibited in a much lighter grade than in any previous case. The peritoneal coats of the liver and stomach were healthy, but the mucous surface of the latter presented several patches of inflammation. The liver and gall-bladder were in normal states.

Case VII. M'Guigan was delivered, March 13th, after a healthy labour, of her first child.

14*th.* Doing well.

15*th, about* 6 *P. M.* She began to complain of pain over the uterus; no milk; lochia as great as usual; pulse 90; tongue coated with a white fur. Directed Calomel, gr. x., Opii, gr. ss. to be followed by a dose of castor oil.

16*th*, 7 *A. M.* Has slept well; medicine has produced two healthy stools; pulse 120; lochia less; secretion of milk very slight. Directed Calomel, gr. x., Opii, gr. ss. and the common injection to open the bowels.

7 *P. M.* Bowels have been freely opened; discharge healthy.

17*th*, 7 *A. M.* Has slept well; milk and lochia increasing in quantity; tongue still furred. Directed Calomel, gr. x., Opii, gr. ss.

7 *P. M.* Directed common injection.

18*th.* Injection operated; symptoms improved, but tongue still furred, and pulse frequent.

25*th.* She recovered; convalescence however was slow.

Case VIII. Mary Sullivan was delivered, March 16th, after a healthy labour, of her first child.

March 18*th.* During the morning, as she was somewhat feverish, she was bled ℥xv. About 9 P. M. she began to complain of pain and soreness over the uterine region; pulse 120; tongue coated with a white fur. She was immediately raised up in bed and bled until she became faint, which took place after the abstraction of ℥xxiv. of blood. Directed Calomel, gr. vj., Pulv. Dover. gr. x.

19*th,* 7 *A. M.* Has slept well; secretion of milk very copious; lochial discharge less than yesterday; pulse 112; tongue moister; tenderness over uterine region much relieved by the last bleeding, but still complains on pressure being made over the abdomen. Directed Calomel, gr. vj., Pulv. Dover. gr. v. every three hours; apply one hundred leeches over the uterus and to the groins.

Noon. Pulse 120; abdomen less tender; bowels not opened since yesterday morning. Directed an injection to open her bowels, and to have the vulva washed with warm water. Continue calomel and Dover's powders.

8 *P. M.* Feels no pain. Her bowels have been opened a second time by an injection. Discontinue calomel and Dover's powders. Morphia p. r. n.

20*th,* 7 *A. M.* Has slept well; pulse weak, 138; tongue furred, but moist; tenderness over the abdomen very slight. Directed Sulph. quinine, gr. j. every three hours; chicken water ad libitum.

Noon. Bowels have been opened several times during the last hour, discharges watery and bilious, without pain however. Directed the quinine to be taken every two hours.

4 *P M.* Bowels have been opened twice since noon; milk and lochia decreasing in quantity. Directed in addition to the former treatment, a tablespoonful of the cretaceous mixture every half hour, an anodyne injection, and the application of a poultice to the vulva, with a view of increasing the lochia.

7 *P. M.* Pulse 120; skin dry; very anxious about her situation; has had several stools, which were attended with considerable pain. Discontinue pills of quinine. Directed Spt. nit. dulc. ʒj. every hour. Continue morphia and cretaceous mixture.

21*st,* 7 *A. M.* Bowels have been opened several times during the night; milk and lochia are almost suspended; pulse very frequent; no tenderness of abdomen, except for a short time after her bowels have been opened. Directed Creta. ppt. ʒj. every two hours; an injection, Sulph. zinc. ℈j. to a pint of water. Let her drink freely of chicken soup.

Noon. Bowels have been opened several times; discharges consist of bloody mucus, mixed with small portions of fæcal matter; no tenderness of the abdomen.

7 *P. M.* Purging continues. Directed an injection of a gill of flaxseed tea with ℥ss. of lard, and twenty drops of laudanum; continue chalk mixture; give ext. rhatany every two hours alternately with the chalk mixture; let her drink freely of chicken water, wine whey, &c.; morphia pro re nata; inject barley water into the vagina every few hours.

10 *P. M.* Secretion of milk more copious; pulse 110; tongue rather dry.

22*d,* 7 *A. M.* Has slept well; only one stool during the night; milk has returned to a considerable extent, but lochia is very slight; pulse soft, 104; tongue moister; mind more cheerful; appetite good. Continue treatment.

7 *P. M.* No change since morning.

23*d,* 7 *A. M.* Has slept well; milk in good quantity; lochia slight; has had one healthy stool; pulse 104; tongue cleaning off.

24*th.* Continues doing well. Continue treatment.

Art. IV. *Notice of an Experiment on the Vascular Connexion of Mother and Fœtus.* By W. E. Horner, Professor of Anatomy in the University of Pennsylvania.

A WHITE female, aged twenty-four years, being in the ninth month of pregnancy, died, April 25th, 1833, at the Philadelphia Almshouse. The next day, in the presence of several of the physicians and students, I injected through the aorta one gallon of the saturated solution of prussiate of potash, and afterwards an equal quantity of a saturated solution of sulphate of iron. The injection penetrated minutely, and the precipitate of Prussian blue was visible in many points of the skin, having imparted a deep tinge to the face. The uterus being exposed after a few minutes, the uterine arteries were found well injected, but the injection did not reach the umbilical chord as was ascertained by inspection; and also by chemical tests applied by my young friend, Dr. Goddard, who afforded me much assistance in the whole process, and to whose manipulations and suggestion I was indebted for the injecting articles used.

Having removed the uterus, and conveyed it to the University, I resumed the experiment the next day in the presence of a large concourse of students and several practitioners. All the vessels of the umbilical cord were first injected with a saturated solution of bichromate of potash, and then with a saturated solution of sugar of lead; a beautiful yellow precipitate, the bichromate of lead, occurred wherever the injection reached. I then injected the uterine sinuses with the prussiate of potash and sulphate of iron, as on the day before. The umbilical vessels were then filled with plaster of Paris coloured yellow, and the sinuses of the uterus with the same coloured blue, the latter vessels received readily eighteen ounces of the plaster.

A short time having been allowed for the setting of the injection, I then cut into the substance of the uterus and placenta. No yellow vessels marking the presence of the bichromate of lead were found in the substance of the uterus. The placenta was much infiltrated with the prussiate of iron, which had passed from the vessels of the uterus, and quantities of plaster were found in the cavity of the latter. It may also be mentioned, that in the progress of the injection into the uterine sinuses, the membranes were raised from the uterus in vesications.

The parts were then put aside for future examination. The uterus being distended, it was sufficiently dried in a fortnight for further inspection, upon which I could not still find any blue injection in the umbilical vessels of the placenta, or yellow injection in the vessels of the uterus. The placenta was however coloured alternately yellow and blue, in a manner somewhat determinate. As an incision had been made through its middle, the cut surface formed a plane, consisting of two parts closely interlocked, one fœtal and the other uterine, each being designated by its yellow or blue colour. The interlocking bore some resemblance to that of the fingers when they are thrust in longitudinally between each other to their roots: the portions penetrated alternately, the fœtal colour to the base of the placenta, and the uterine colour almost to the summit of the placenta. The appearance would perhaps be better designated by the terms uterine lobes and fœtal lobes mutually and alternately interlocking.

From the result of this injection, it would appear, that though there is a want of continuity as commonly thought between the maternal and fœtal vessels, yet particular portions of the placenta can be readily infiltrated by an injecting matter from the uterine vessels, and would therefore seem to have a more intimate connexion with the uterus; not however by distinct cylindrical vessels passing from the uterus, but rather by the orifices of the uterine sinuses attaching themselves to these portions, and being stopped by them.

The infrequency of opportunities of trying a similar experiment on the human subject, will be perhaps a sufficient apology for narrating the circumstances of a single observation.

Art. V. *Case of Aneurism of the right Subclavian Artery, in which that Vessel was Tied within the Scaleni Muscles.* By Valentine Mott, M. D. Professor of Pathological and Operative Surgery in the College of Physicians and Surgeons, New York.

In the early part of September, 1831, I was requested to visit Mrs. B——, a lady, twenty-one years of age, in reference to a tumour situated in the lower part of the neck. The history of the case was briefly as follows:—A year or two before, she had been thrown from a gig, and received a violent contusion of the right shoulder and left side of the body, from which she had gradually recovered with the exception of a fixed pain in the injured shoulder and the subsequent appearance of a small throbbing tumour above the collar bone. Her physicians had informed her of its character, and the object of her visit to New York was to place herself under my care and abide by my judgment. On examination, I found a tumour as large as a hen's egg on the outer edge of the scaleni muscles, and immediately over the subclavian artery. Its pulsations were unequivocally aneurismal, and left no hesitation as to the correctness of the opinion already given on the nature of the disease. Her general health was considerably impaired, and the tumour was rapidly increasing in size.

With no other precedent than Dr. Colles' case,* and aware of the uncertainty that must ever attend the result, of putting a ligature amidst large collateral branches upon a great vessel so near the heart, I deemed it a duty to explain to my patient, her husband and her friends, the critical situation in which she was placed, and leave it for them to decide on the course to be pursued. In a few days I was informed of her resolution to take the chances of the operation, and fixed on the 22d of September for its performance.

At 12 o'clock on that day she was placed upon a table, having taken an hour previously sol. sulph. morph. gtt. xx. The shoulders were elevated by pillows, with the head thrown backward, and the face and body inclined to the left side. An incision was began at the lower part of the outer edge of the sternal portion of the mastoid muscle, and carried upwards about two inches, and another from the commencement of the first along the upper surface of the clavicle of the same extent. The triangular flap, and a corresponding portion of the platysma myoides with its investments, were separately dissected from their connexions and turned aside. The clavicular portion of the mastoid muscle was next severed immediately above its insertion and reflected upon the neck. This laid bare the deep-seated fascia, which was raised with the forceps and divided a little below the course of the omo-hyoid muscle and outside of the deep jugular vein. Upon enlarging this opening an inch downward, the adipose and cellular tissues were readily pushed aside, and the scalenus anticus exposed to view. Desirous of tying the artery, if admissible, on the acromial side of this muscle, I passed a finger carefully down upon its outer edge, but found from the vicinity of the tumour, that it would be best to secure it on the tracheal side, and avoid all disturbance of the parts in that situation. Accordingly, the cellular substance was separated with the fingers and handle of the knife, and the subclavian exposed just within the thyroid axis, the branches of which could be plainly seen. The filamentous tissue was raised from the artery with the forceps, and cautiously divided with a small scalpel, and the ligature conveyed under the vessel from below upward by the American needle. In accomplishing this part of the operation, curved spatulas were used to separate the wound, and a blunt hook to draw the deep jugular towards the trachea. The knots were readily made with the fore-fingers. Pulsation in the aneurism and vessels of the arm immediately ceased.

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* The patient died on the eighth day after the operation. See the particulars, in the Edinb. Med. and Surg. Journ. for January, 1815.

The detached parts were restored, and the integuments retained by the interrupted suture and adhesive straps. Three small arteries were tied—no vein was cut that required a ligature—about four table-spoonfuls of blood might have been lost.

Dr. Vaché assisted me in the operation, and it was performed in the presence of Drs. Parkin and Howard, and a number of my pupils. The patient sustained it remarkably well, and did not evince any particular sensation or effect when the artery was tied.

Evening. Has vomited several times, which she attributes to the morphium taken in the morning; right hand and arm warmer than natural; has a little reäction of the heart and arteries; complains of pain in the right arm and side of the neck; radial artery feels full, but has not any pulsation in it.

23*d*, *morning*. Passed a comfortable night; the vomiting was allayed by mint tea; arm warmer than natural, and feeble pulsation in the radial artery; pulse 88, soft; still feels pain in the arm and neck.

Evening. Complains of head-ache; pulse the same; skin moist and not heated; temperature of both arms alike, counted eighteen feeble pulsations in the right radial artery. The pulsation of the carotids being unpleasant, recommended the head and shoulders to be elevated on pillows.

24*th.* Pain in the neck and arm less than yesterday; head-ache continues; skin natural; tongue a little furred; temperature of the limb natural; pulse the same; counted nine or ten pulsations in the radial artery in a minute, but more feeble than yesterday. Directed a Seidlitz powder to be taken at intervals until the bowels are moved.

Evening. The aperient has operated but once; pulse 70; only a slight tremulous motion to be felt in the radial artery; has had several turns during the day of cool hands and feet, followed by flushes of heat, and attended with some feeling of weight about the chest; violent pain in the head, with a flushed countenance; pain in arm less, and in both arms alike. Took eight ounces of blood from the left arm, which relieved her unpleasant feelings immediately.

25*th*, *morning*. Has slept but little during the night, notwithstanding the relief afforded by the bleeding. Complains of pain through the upper part of the right shoulder and base of the scapula, and occasional sensation of a tingling or creeping motion in the arm to a painful degree; pulse 80; skin natural; no distinct pulsation in the right radial artery, but tremulous as yesterday. Seidlitz powders to be repeated.

Evening. The medicine has operated freely; has had some sleep; head-ache much less; pulse 80; skin moist and natural. Complains of great pain in the upper part of the right arm, also deep in the neck and extending to the spine, between the scapulæ; says she has pain in swallowing and in taking a full inspiration. Advised her to take seven drops Sol. acet. morph.

26*th, morning.* Has slept well and feels much better; breathing good; head, back, shoulders, and arm free from pain; pulse 80; skin natural and moist; tongue white. Pulsation in the radial artery more distinct; counted forty-one beats in a minute.

Evening. Says she has passed a very comfortable day. No alteration since the morning. Directed ten drops of the Sol. acet. morph. at bed-time.

27*th, morning.* Did not pass as good a night as the preceding; pulse 74; arm and body of natural temperature; pulsations of the radial artery fifty in a minute.

Evening. About the same as in the morning; bowels have been moved by some ripe fruit eaten during the day. Ordered thirteen drops of the morphine at bed-time.

28*th, morning.* Feels much better; very little pain in the shoulder, and none in the arm; pulse 79; pulsation in the radial artery more distinct, and beats sixty-one in a minute.

Evening. Only complains of a trifling pain in the shoulder, such as lying in one position occasions; pulse 75; in the right arm 71 distinct beats in a minute. The wound discharging a little sanious fluid unpleasant to the patient, removed the bloody lint and part of the plasters, and redressed the wound; it looks very well.

29*th, morning.* Omitted the morphium last night and slept well; is in all respects better; pulse 72; in the right arm 69.

Evening. The same as in the morning; number of pulsations in both arms alike, but much more feeble in the right.

30*th, morning.* On being carefully raised up in the bed in order to take nourishment, after a little irritation from the absence of the nurse at the moment when wanted, she suddenly called out to a relation in the room and said that she was bleeding. About two table-spoonfuls of dark-coloured blood was slowly discharged. It ceased on a little pressure; pulse 76 in both arms; removed the lint, and dressed the lower part of the wound, which looks well; gave eight drops of Sol. acet. morph.

Evening. At eight o'clock, four table-spoonfuls as near as could be judged were again discharged from the wound, and at 12 perhaps a tea-spoonful more. It was of a dark colour, and was readily checked by pressure.

October 1st.—Feeling sick at the stomach this morning, some Cologne was poured over the epigastric region, which immediately occasioned a chill that lasted half an hour. During it she vomited several times. Considerable increase of heat and other attendants of the hot stage continued during the day. Pulse 100 in both arms.

Evening. Febrile disturbance still continues; pulse the same; no further discharge of blood from the wound.

2d, morning. Complains of soreness of the throat; febrile excitement still continues; pulse 110, rather tense; directed Epsom salt in Seidlitz powders.

Evening. Salts have operated twice, and she feels better; has had several rigors during the day, and vomited several times; pulse 104, somewhat tense; took ℥xviii. blood from the left arm with manifest abatement of the symptoms; the blood upon standing exhibited strong evidences of inflammatory action; it was very buffy and much cupped.

3d, morning. About 10 o'clock last night had a trifling oozing of blood from the wound, after a hard turn of hawking; was comfortable afterwards, but did not sleep much; complains of head-ache; for two hours past, has been in a free and easy perspiration; pulse 100, soft; says her throat is very painful in deglutition; the left tonsil is swelled; directed a dose sulph. magnesia.

Evening. Has had a severe ague which lasted about fifteen minutes, during which she vomited; heat that followed very considerable; perspiration very copious for several hours; wound has discharged a small quantity of blood twice since morning; medicine has operated on the bowels; pulse 108; febrile heat much less. Whilst sitting by the bed-side and preparing to dress the wound, four table-spoonfuls at least of florid arterial blood was suddenly discharged; on removing the plasters and lint it as suddenly ceased.

4th. Between the hours of four and five A. M. had an ague which continued half an hour, accompanied with vomiting, heated skin, and profuse perspiration. Delirium commenced with the chill, and continued more or less until ten o'clock. Directed to take on the subsidence of these symptoms, one tea-spoonful of the following medicine every hour until another chill supervened.

℞. Sulph. quinine - - - grs. xxiv.
Acid. sulph. arom. - - ʒij.
Sirup simplex - - - ℥iij. M.

In the afternoon between four and five o'clock, a slight chill came on, attended with vomiting; the fever which supervened was mild, and early in the evening the quinine was resumed. At 10 P. M. the wound was dressed; looks very well; no bleeding since last night; pulse 100.

5th. Had a slight chill about midnight, and is now, 10 A. M. labouring under a similar one; pulse 110. The bitterness of the preparation of quinine being very offensive to her, ordered instead of it one grain of the sulphate in pill every hour, as soon as perspiration came on. Dressed the wound; two tea-spoonfuls of blood appeared to have been discharged; says her throat is much better, and a cough which was quite harassing yesterday has left her.

Evening. Has had her clothes changed, and been removed into a clean bed; perspiration left her in a great measure about noon, and she has had a refreshing sleep.

6*th, morning.* Passed an excellent night; towards morning had slight sensation of the chill and much less fever; pulse 108; directed more nourishment to be given and the quinine continued.

Evening. Has had still less chill and fever in the early part of the afternoon; dressed the wound; compress stained with perhaps a table-spoonful of blood.

7th. Had a very comfortable night; feels but little pain in the shoulder this morning; tongue beginning to clean off; has not had any ague since yesterday; feels some appetite; pulse 100. Quinine continued.

8*th.* In all respects better; had a slight sensation of coldness this morning; fur upon the tongue much cleaned off; appetite greatly improved; no bleeding since the evening of the sixth; wound looks well; all of it healed except a small part above the clavicle through which the ligature passes; pulse 104; continues the quinine.

9*th.* In the early part of last evening, after a quiet day, she was attacked with hæmorrhage. The discharge was sudden, and to the amount of a pint; it stopped spontaneously. The effect was great and alarming; she was pale, cold, almost pulseless, when I reached her. In about an hour she rallied, but was restless and disturbed; any form of anodyne was declined. About midnight three or four table-spoonfuls more of blood were lost.

At six o'clock this morning, a profuse gush took place, accompanied with a jet, and whizzing noise; I thought it the moment of dissolution; she again revived. Her mind is calm, and she is resigned to the event; no more hæmorrhage occurred. She lived until the afternoon of the tenth, and died without a struggle.

New York, 25 *Park-Place*, *June* 6*th*, 1833.

ART. VI. *Further Cases and Observations relative to Rheumatism.*

By J. K. MITCHELL, M. D. one of the Physicians of the Pennsylvania Hospital.

SINCE making the former communication on rheumatism,* I have been able to collect a number of cases so illustrative of the truth of the new theory, and so confirmatory of the superiority of the spinal treatment, as to justify a new appeal to the attention of the profession.

CASE I. On the 5th of October, 1831, as Dr. PARKER, of Elkton, Maryland, was driving his carriage down a slight declivity, his horse fell, and he was thrown out in such a manner as to alight on the back of the neck and shoulders. He was instantly paralyzed, *partially* in the hands and arms, and *totally* in the lower extremities. On the following morning there was great pain in the *hands* and *wrists*, with swelling, heat and redness, exactly such as is observed in acute rheumatism. The pain in the hands and wrists was always abated by remedies applied to the affected part of the spine, and aggravated by pressure or rough friction there. The doctor had been subject some years before to rheumatism in the arms, side, and hip, and was able to recognise in this attack the same phenomena. While the rheumatic affection after the fall existed, it exhibited the translateable quality so characteristic of rheumatism, attacking sometimes one arm, sometimes the other, but never passing to *any other part* of the body.

Remarks.—In this case, reported by my friend, Dr. EVANS, of Elkton, with the approbation and concurrence of Dr. PARKER, we have the highly respectable testimony of both, to the opinion that the injury of the spine produced the affection of the upper extremities, and that that affection was in all respects similar to rheumatism.

If it is objected that the hands and wrists might have received simultaneous injury by the fall, the objection is obviated by the fact, that at any subsequent period, pressure or rough friction at *the spinal seat* of injury aggravated or reproduced the tumefaction, pain, and redness of the extremities.

In this case then, we have an obvious spinal cause producing rheumatism in the upper extremities, a rheumatism characterized by pain, heat, redness, tumefaction and translation.

CASE II. Reported by Dr. LAMB, of Frankford.—On the 1st September, 1832, W. W. was attacked with acute rheumatism of the left arm and shoulder, which before the visit of Dr. L. was treated with liniments, sinapisms, &c. without relief. On the 7th Dr. L. saw the case which still presented the acute symptoms, and for which he applied, in the course of the spinous processes of the upper vertebræ, twelve cups, after scarification. "The relief was instantaneous and complete. The arm could be immediately extended and flexed without pain. The swelling subsided gradually, and at the end of a week, the patient was able to resume his usual occupation, and remains well to the present date."

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* American Journal of the Medical Sciences, Vol. VIII. p. 55.

CASE III. Reported by Dr. JOSEPH WARRINGTON, of Philadelphia.—"Elizabeth Turner, aged sixteen, was seized with slight pain and swelling in the right ankle. Finding the circulation active, I took blood from her arm, and, for inactive bowels, ordered a dose of rhubarb and magnesia. On the following day the blood taken indicated an inflammatory condition. Although the medicine had operated, her case was worse. She cried with pain, and was unable to turn in bed without the most tender assistance. *Both* ankles looked inflamed, and were too painful to admit of the slightest touch. I ordered fifteen cups with scarification to the lumbar spine—eighteen were applied. On the following day she was able to turn herself in bed, on the day after that she sat up, and in four days more was able to remove to the distance of six squares without inconvenience. She has since continued free from the disease."

In a note appended to this case Dr. W. says that he has found "much good to follow" the use of the spinal treatment of rheumatism, but has not *always* succeeded in effecting a cure by it. This regret must be felt by every one who attempts the cure of rheumatism by any and every method hitherto suggested; but it is far from my intention to propose the *exclusive* spinal treatment. I have, it is true, in the progress of this highly interesting investigation, complicated the inquiry as little as possible, as must always be done in struggling to introduce a novel method of management, or to establish a new pathological view, founded on the evidence of superior practical success. That having been done in a manner which seems satisfactory to the profession, at least in this country, I have of late been much less exclusive in the treatment of the more obstinate forms of the disease, although I do not perceive on the whole that the success has been greater since the practice has been less simple.

From various very intelligent and respectable sources, cases have been forwarded to me, strikingly illustrative of the efficacy of the new practice, but as they are so much like those already given, it would scarcely add force to the conviction by their repetition. I have, in my own private practice, noted a number of facts bearing advantageously on the point for which I contend; but as these cases always carry less weight when cited in support of a favourite theory or practice, I shall hold them in reserve for mere instruction, when, after the settlement of the doctrine and practice, I shall find leisure to execute my purpose of embodying in a work on the subject, all the facts which may have professional value.

It will better illustrate the whole subject to give a *condensed* view of the whole of the hospital cases reported *at length*, at my request by my zealous and inquiring friends, the resident physicians of the Institution.

Two cases in the surgical department reported by THOMAS STEWARTSON, M. D.

CASE IV.—Affecting upper extremities solely; pain, redness and swelling. On 13th May the attack began.

On the 15th, ten cups to upper part of spine.

16*th.* Four cups.

17*th.* Blister to same region 3 by 7 inches.

18*th.* Convalescent.

21*st.* Reported well.

CASE V. 21*st January*, 1832.—Attack of superior extremities removed by cups; translated to inferior ones; again relieved by cups and Dover's powder, and a cathartic. But complete cure was effected by the use of sulphur internally, and the patient reported well on the 2d of February.

Ten cases in the medical department reported by GEORGE W. NORRIS, M. D.

CASE VI. 15*th March*, 1831.—Bled, and frictions of soap liniment without relief. Cups to spine at both ends; partial relief.

17*th.* Cups again; more relief.

20*th.* Cups.

Reported on 26th as having been entirely free from pain since the 20th. Discharged.

CASE VII. *March* 30*th.*—Rheumatism of both knees, of eleven days duration. Ten cups applied at one time to lumbar spine entirely removed the disease, and after a few days he was discharged.

CASE VIII. *October* 13*th*, 1831.—Had been cupped eight times on the spine *below* the seat of disease, and once on the ribs where his pain chiefly lay. The latter alone gave him any relief. He also took, without benefit, blue mass and Dover's powder. On admittance to the hospital, he was put exclusively on the use of cups to the proper part of the spine. Three successive applications gradually relieved and finally cured him. Discharged on the 9th November.

Case IX. Of all the large joints, duration three weeks before admittance, which was on the 20th December, 1832. Cupped over the spine at both extremities, without relief.

21st. Renewed application, with improvement *in upper extremities* only.

22d. Repeat cups over lumbar region with the effect of total removal of pain. For a surgical affection, this patient was retained until 28th January, 1833, without return of rheumatism.

Case X. A similar case, admitted on 23d December, 1832, immediately relieved by cups, one application of which cured him. For an injury of the toes, he remained until the 15th January, without relapse, and was then discharged.

Case XI. A case of three weeks duration admitted on 30th December, 1831. Pain and tumefaction in right knee and shoulder, &c. Cups relieved the pain *in the shoulder*, and a second application of them entirely removed it *from that part*. At the third cupping, which was exclusively applied to the lower part of the spinal column, the whole disease left the patient. For mere *stiffness*, a liniment was ordered, and on the 4th February the man was discharged.

Case XII. John Morgan, a seaman, aged forty-eight, admitted December 30th, 1831, for a rheumatism of eight months duration, affecting chiefly his hips, knees, and elbows. At present only the lower extremities are affected. Two cuppings to the lumbar region entirely removed the pain and tumefaction. He remained in the hospital on account of a cough, until the 28th January. During the interval a slight attack of his rheumatism was again obviated by cups.

Case XIII. Case of nearly the same kind as the last, of six weeks duration, was received on the 30th January, 1832. As in other cases the relief from scarification was most speedily felt in the *upper* extremities.

The cups were again applied on the 4th, 6th, and 11th, when the pain, &c. entirely departed. On the 15th, he was discharged.

Case XIV. Chronic rheumatism, admitted on the 3d December, 1831. Affects *chiefly* the scalp and upper extremities, and is almost entirely confined to the left side of the frame. The only tumefaction is observed in the left leg. On the 6th, he was free from pain, but relapsed on the 7th, and again on the 29th. Because of an influenza, he was detained in the hospital until the 11th of February, and then discharged cured. In every relapse the cups gave full relief.

Case XV. William Cater, seaman, aged twenty-nine, admitted on the 16th February, 1832, for rheumatism, affecting the back of his neck, left shoulder, and elbow, but moving from place to place on that extremity; aggravated at night; the elbow is tumefied and very tender to the touch; ten cups to the cervical spine; pain abates during the operation, and the patient sleeps better. On the 19th, repeat; again on 22d. Case reported well. Discharged on the 27th.

Twenty cases reported by MIFFLIN WISTAR, M. D.

CASE XVI. Joseph Pratt, admitted 4th October, 1832, and discharged on the 24th November, after several relapses. *Upper extremities* most easily relieved. The relapses were of the lower extremities.

CASE XVII. Joseph L. Baker, admitted 29th November. On 3d December, free from pain. Reported well on the 11th. Same treatment.

CASE XVIII. John Charles, December 1st, 1832, admitted. Affection of thighs, knees, and ankles. Two cuppings to lumbar spine gave relief. Reported on 4th free from pain.

CASE XIX. John Wilson, 3d December admitted. Head and shoulders affected. Cups to nape of neck once. Reported on the 6th free from pain.

CASE XX. Affection of shoulders, elbows, and knees. Admitted on 24th October, 1832. Applied eight cups to the *dorsal* spine with relief of *lower* extremities, but not of the upper. A repetition higher up gave relief to the arms. But in this case on the 15th November, for pain in the neck a blister was made, and because of a suspicion of syphilitic taint, Syr. sarsap. with minute doses of Corros. subl. were used, and on the 19th December he was reported well.

CASE XXI. Admitted 7th December, 1832, for a rheumatism of all his extremities. Besides the cups, for the reasons which modified the treatment in Case V. Sarsap. and Corros. subl. were added to the local depletion. On the 15th December the case was reported as perfectly well. He was cupped for the last time on the 13th.

CASE XXII. Admitted November 24th, 1832. Had been in the hospital from the 24th Sept. to the 13th Nov. and was sent home at her own request before she was well. The treatment had been that usually applied to such cases exclusive of the spinal applications.

On reädmission she complained of violent pain in her hands, knees, and feet, all of which were swelled, red and very tender. Eight cups were applied, four to each end of the spine.

25th. Arms much better; *legs* not benefited. Five cups to lower part of the spine, and one-fourth of a grain of sulph. morph. at bedtime.

27th. No better; reäpply cups.

28*th.* Cupping of yesterday gave relief.

December 1*st.*—Not so well. *Empl. epispast.* to lumbar region.

4*th.* Much better.

5*th.* The upper extremities are more painful to-day. *Empl. vesicat.* to nape of neck.

8*th.* Much better.

12*th.* As before.

13*th.* Increase of pain in inferior extremities. Ordered cups to lumbar spine.

14*th.* Relieved.

30*th.* As at last report.

January 10*th.*—Pain has returned within twenty-four hours, for which reäpplied cups.

21*st.* Supported her hand by a splint.

30*th.* Reports herself well.

Case XXIII. Admitted on the 23d of November, 1832. It is William White, whose attack two years before, cured by cupping, was reported in my first paper on rheumatism. Through the winter of 1831–2, he remained free from disease, but was attacked about the middle of November, 1832, with pain and swelling of his lower extremities. Before his entrance into the hospital, a translation took place to his left hand and wrist and right shoulder. As on the former occasion, cups to the spine gave him immediate and great relief, but frequent relapses caused us to apply blisters and pustulating ointment to the spine, raw cotton dipped in laudanum to the limbs, and splints to the joints. In addition, a nightly dose of Dover's powder was found necessary to allay pain and procure sleep. After all these things had in a great measure failed to procure ease, cups were again resorted to, and were at length the final cause of cure, according to the report of the 16th of February, 1833, at which time the history of the case before me closes.

Case XXIV. John Cave, sailor, aged fifty-two, was admitted on the 28th of December, 1832, for a painful affection extending from the hip to the ankle of the left leg, causing pain and stiffness of its joints. The case has existed for ten weeks. Ordered eight cups to lower end of spine.

29*th.* As yesterday; apply cups again.

30*th.* Rather easier; apply cups again.

31*st.* Some relief, but as there is still great pain, cups were to-day applied *in the course of the pain down the leg.*

January 3*d.*—Has been *much easier* since the 31st, but is to-day in more pain. Ordered *cups again to the limb.*

4*th.* Improved.

8*th.* As before.

11*th.* Not so well; applied cups to *lumbar region.*

12*th.* He is *much better.* He felt great relief immediately after the removal of the cups.

14*th.* As on the 12th.

15*th.* His limb is very painful to-day; eight cups to lumbar region.

16*th.* Again *greatly relieved.*

20*th.* Support his limb by a splint.

February 2d.—Continues free from pain.

13*th.* Remove splints; walks with great facility.

22*d.* Continues well.

Case XXV. Admitted on the 2d of January, 1833, and reported well on the 22d; was cupped five times, bled once, and took ℥j. sulph. magnes.

Case XXVI. Admitted January 15th, and reported well on the 19th. Had been afflicted *for a month* before admission. Was cupped on the spine once, and took a dose of calomel, followed by Epsom salts.

Case XXVII. Admitted on the 10th of February, and reported free from pain on the 13th. Acute rheumatism of three weeks duration. Cups relieved his *upper*, but failed to impress his *lower* extremities—a repetition of them to lumbar region afforded ease. For a severe pleuritic pain in his side, ℥xvi. of blood were taken from the arm, and a dose of sal. Epsom was given.

Case XXVIII. G. W. Peirce, admitted on the 13th of February, and reported well on the 15th, had violent pain and tumefaction of the left leg of two weeks duration. He was cupped on the lumbar spine once, and suffered no other treatment.

Case XXIX. Mathew Donnelly, admitted 13th of February. Had been sick for five months. On admission both ankles were inflamed. Four times cupped on lumbar region, and was free from pain on the 27th. On 2d March relapsed; cupped again on spine with relief. On 4th blistered *his ankles.*[*] Reported free from pain on 10th.

Case XXX. Admitted on the 2d of February. P. M'Coy has inflammation of all the large joints indicated by pain, redness and tumefaction. The attack has lasted for six days. Apply ten cups to the spine.

3*d.* The cupping has afforded great relief. Directed a pectoral mixture for his cough.

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[*] I have sometimes received cases which had resisted peripheral treatment; but which could not be entirely cured by the central method. After alleviation by the latter, the secondary seat is often appealed to with the happiest effect.

5th. Complains of pain in the left wrist, shoulder and hip; reäpply cups; and because of a dry and encrusted tongue, order mass. hydrarg. grs. iij. to be followed by a dose of magnesia.

6th. Rather better; order neutral mixture.

7th. Continues better; cups to the spine.

10*th.* Continues to improve.

26*th.* Has no pain.

Case XXXI. J. Parsonage, aged seventeen, admitted on the 23d of February, 1833, for a rheumatic affection of two months duration, is afflicted with pain and tumefaction of the left knee. Apply eight cups to lumbar spine.

24*th.* No better; reäpply cups.

25*th.* Easier, but is still in much pain. Cups to be again applied to the spine.

27*th.* Free from pain.

March 1*st.*—Complains of pain in both shoulders; apply eight cups between them over spine.

2*d.* Experienced the usual relief from cupping.

8*th.* Continues well.

Case XXXII. Wm. Woodruff, aged twenty-seven, was admitted on the 7th of January, for rheumatism of the shoulders and knees, which are swelled and painful. Was cupped on the spine; cupped again on the 8th; blistered over the cervical spine on the 10th; and on the 16th, for returning pain, again cupped. By these means relief of the upper extremities was experienced, but it was found necessary to cup for the lower pain on the 18th. Reported *much* easier on the 19th. On the 30th the report states, that "owing to the unfavourable weather he has had several returns of pain, which were relieved by cups; but as there existed some reasons to suppose a syphilitic origin, compound syr. sarsap. was ordered."

February 12*th.*—Complains of pain in the shoulders. Apply six cups to corresponding part of the spine.

13*th.* Has again experienced relief.

26*th.* Free from pain.

Case XXXIII. John Robinson was admitted on the 16th of January, 1833, for violent pain in his right shoulder, caused by a sprain in attempting to lift a heavy weight some weeks before. In this case, evidently disconnected with the central nervous masses, cups were repeatedly applied to the cervical and upper part of the dorsal spine with very little if any benefit, although great pains were taken at the same time to keep the joint at rest. After convincing ourselves of the futility of the practice, we used the scarificator and cups over the joint itself with immediate advantage, and in a few days the patient could use his arm without inconvenience.

Case XXXIV. Solomon Summers, seaman, aged twenty-seven, was admitted on the 25th of February, 1833, for rheumatism of the shoulders, elbows, and knees; all of which were tumefied and very painful. The attack had endured for two months. Eight cups to lumbar spine.

26*th.* The same as yesterday. Ten cups to upper part of spine.

27*th.* His *upper* extremities are much easier.

28*th.* As his knees are very painful, cup the lower part of spine.

March 1*st.*—Feels much better since last cupping.

3*d.* Complains of some pain in both shoulders. Cups to upper part of spine.

4*th.* Much better.

8*th.* Continues well.

Case XXXV.—R. M'Donald, a female, admitted on the 16th of February, for a painful affection of the *head*, to which she has been subject at intervals for several years. This attack was brought on apparently by exposure to cold, and is accompanied by violent pain in the *lower jaw.* Apply six cups to the *head.*

17*th.* Greatly relieved; repeat cups to the head.

19*th.* Continues better.

March 6*th.*—The treatment has been continued according to the degree of pain, and the patient may be considered well.

In reviewing the thirty-five cases now presented to the readers of the Journal, several general truths seem worthy of particular notice. Among these not the least important is the bearing on the question of *pathological seat.* The first case, in conjunction with the cases of rheumatism produced by carious spine, reported in my first paper on this subject, leaves no doubt in my mind that a *condition of parts* exactly the same as in rheumatism, may and does exist as an effect of irritation of the great nervous masses at the centre. It remains to be proved by the opponents of this system, by equally conclusive facts, that a genuine translateable rheumatism is ever found to be independent of such a cause, or that the disease *properly called rheumatism* is ever a primary affection of the limbs or joints. The extraordinary facility with which most of the recited cases were cured by exclusive spinal treatment, goes far to establish concurrently the same truth. For when a true inflammation of a joint has a purely local character, as in Case XXXIII. the spinal treatment is altogether useless, while the more direct application of the same means meets with prompt success. If inflammation alone of the tissues ordinarily attacked by rheumatism constituted that disease, inflammation from a sprain or blow affecting the same parts should have the same translateable character, which is so characteristic of true rheumatic inflammation, and should also be capable of passing not only to similar parts, but to the viscera, as not unfrequently happens in rheumatic cases.

The great value of the opiate practice in rheumatism, is no small auxiliary to the arguments in favour of the central origin, because it is only by lessening nervous irritation that such a medicine can prove useful. It follows as a corollary that the best possible practice in these cases consists in spinal depletion and counter-stimulation combined with the judicious use of opiates. That such a practice has not been more generally followed in the public duty at the hospital, arose from a desire to obtain the more conclusive evidence of the truth afforded by the avoidance of obscuring complication. That being now attained, the practitioner will no longer feel justified in leaving out of his system of cure, any one of the useful auxiliaries called for by the varying contingencies of his cases.

Another general fact is that rheumatism attacks those parts only whose nerves come out at or near to the part of the *medulla spinalis* which is in an irritated state. This was the fact in the carious cases, and in the case of Dr. Parker, of Elkton. Although all the nerves in descending along the spinal canal, must have been subjected to diseased influence, only those which *took their departure* from that part of the spine were influential in producing rheumatism, which consequently appeared at *their* sentient extremity exclusively.* The same point is sustained strongly by the effect of the remedial measures, which were scarcely ever of any use when applied to remote parts of the spine, and were generally promptly beneficial, when directed to the origin of the nerves of the part inflamed.

As far as we could ascertain, the remedial effect of the spinal treatment was most potent when applied exactly over the place of exit from the spine, of the nerves which supplied the inflamed part. It is also remarkable that the affection of the upper extremities was almost always the most easily remedied. This may be ascribed with probability to the greater effect of the cups on those parts of the spine which lie least imbedded in cellular tissue and muscular fibre.

In conclusion, I may be permitted to advert to the close connexion between common rheumatism and certain diseases of mucous and fibrous tissues in the eyes, nose, mouth, alimentary canal, bladder and urethra. In many cases diarrhœa and dysentery are found to alternate with rheumatism of the extremities, and particularly of the lower limbs. Wherever such cases happen, they are found to yield more readily to spinal treatment than to any other mode of cure, thus affording another proof of the spinal origin of such cases.

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* In my letter to Dr. Evans, March 14th, 1832, making inquiry respecting Dr. Parker's case, I find the following:—"Was there, (I should suppose not,) any rheumatic pain of the legs during the present illness?" Answer—"Has not had any rheumatism in the legs since the injury."

On the whole it seems to me that the evidence for the pathology contended for, is much more conclusive in the present instance, than that on which the profession is accustomed to rest for much of its accredited science. As far as I can comprehend the objectors, their main difficulty lies in abandoning an unquestioned opinion, founded on prescriptive learning, and the more obvious phenomena of the disease. But even they will find it impossible to explain away the facts brought forward in favour of the new doctrine, unless they can show that in original inflammations of the periphery, the most judicious treatment consists in applications to the centre, a position fully overthrown by every abortive attempt to remedy sprains or bruises of the limbs by medicaments to the spine. Another objection lies in the absence of tenderness of such parts of the spine as are here presumed to be under irritation. If, however, that irritation transmits pain to a remote part, we ought not to expect to find it tender on pressure, but we ought to look for aggravation of the peripheral disease, an event actually produced in Dr. Parker's case. In a very few persons the spine was found tender on pressure, but these were patients who belonged to a debilitated class, in whom certain parts of the spine are almost always found too susceptible, whether they have or have not rheumatism, hysteria, or any fibrous or any uterine irritation. That tenderness so much insisted on, is but proof of an irritated condition of the *spinal braces*, the effect of weakness too highly tasked, and is totally independent of disease of the *medulla spinalis.*

So far as this case has been discussed, the *facts* have been adduced solely on the side of the new doctrine, while its opponents have contented themselves with irrational and supposititious objections, according to a system which long since driven from other sciences, finds yet, I am sorry to say, a refuge in the temple of medical dogmatism. They admit the remarkable cures, the potent practice. They do not deny that rheumatism is produced by caries and injury of the spine, but as they do not see or feel the spinal irritation in the rest of the cases, the treatment, the relief, the victory over this obstinate malady, carry no argument to them, though sustained by analogies so striking and so profitable.

Tabular Abstract of Cases.

Name.	Date of admission.	Date of Cure.	Duration of treatment.	Remarks.
W. W. - - -	1st Sept.		1 day	
Eliz. Turner -	14th Sept.		4 days	
Geo. Steiner -	13th May	18th May	5 do.	
Chas. Wilson -	21st Jan.	9th Feb.	19 do.	Spinal treatment failed.
W. Barnard -	15th Mar.	20th Mar.	5 do.	
Chas. Schrœder	30th Mar.	1st Apr.	2 do.	
W. Bowes - -	1st Nov.	6th Nov.	5 do.	
Anthony Della	20th Dec.	25th Dec.	5 do.	
Christ. Rudolph	23d Dec.	25th Dec.	2 do.	
Daniel Wilson	30th Dec.	2d Jan.	3 do.	
John Morgan -	30th Dec.	2d Jan.	3 do.	
Charles Slater	3d Jan.	11th Jan.	8 do.	
Andrew Franklin	3d Dec.	11th Feb.	70 do.	Four relapses.
W. Carter - -	16th Feb.	22d Feb.	6 do.	
Joseph Pratt -	4th Oct.	6th Oct.	2 do.	Several other relapses, discharged on 24th Nov. Total, 59 days.
The same -	15th Oct.	17th Oct.	2 do.	
Jos. L. Baker -	29th Nov.	3d Dec.	4 do.	
John Charles -	1st Dec.	4th Dec.	3 do.	
John Wilson -	3d Dec.	4th Dec.	1 day	
J. M. Grezinger	24th Oct.	19th Dec.	56 days	Salivated.
James Carpenter	7th Dec.	15th Dec.	8 do.	
Margaret Poston	24th Nov.	30th Jan.	67 do.	Blisters and splints.
W. White - -	23d Nov.	27th Nov.	4 do.	Total, 74 days; other treatment used.
Relapsed -	1st Dec.	26th Dec.	26 do.	
Relapsed -	2d Jan.	16th Feb.	34 do.	
John Cave - -	28th Dec.	2d Feb.	36 do.	Splints.
John Henry -	2d Jan.	22d Jan.	20 do.	
W. Goldsmith	15th Jan.	19th Jan.	4 do.	
Capt. P. - -	10th Feb.	13th Feb.	3 do.	
G. W. Peirce -	13th Feb.	15th Feb.	2 do.	
M. Donnelly -	13th Feb.	27th Feb.	14 do.	Total, 22 days.
Relapsed -	2d Mar.	10th Mar.	8 do.	
P. M‘Coy - -	2d Feb.	10th Feb.	8 do.	
J. Parsonage -	23d Feb.	2d Mar.	7 do.	
W. Woodruff -	7th Jan.	26th Feb.	50 do.	
S. Summers -	25th Feb.	3d Mar.	7 do.	
R. M‘Donald -	16th Feb.	6th Mar.	18 do.	

Twenty-two of these cases were cured within eight days; and of the remaining ten cases, four were instances of frequent relapses through imprudent exposure during convalescence. At least two were supposed to complain for the purpose of remaining in the hospital, an event which not unfrequently exhibits hospital practice in a disadvantageous light. Only four cases therefore required any other than spinal treatment.

Although cupping is the most potent mode of spinal treatment, I have, in private practice, not unfrequently found that a good rubefacient, such as a sinapism, produced great relief, and sometimes effected a cure. At the very commencement of an attack, it is often adequate to the entire removal of the pain, and consequent prevention of greater severity of symptoms.

ART. VII. *Case of Intussusception.* By SAMUEL JACKSON, M. D. Assistant to the Professor of the Institutes and Practice of Medicine and Clinical Practice in the University of Pennsylvania.

IN February last, Mr. F. called on me for advice, and gave me the following statement of his case. In June, 1832, he had an attack of bilious colic, as the disease was called by his physician. He was treated by depletion and active purgatives. The violent symptoms were overcome, and he was enabled to resume his accustomed employment, which was that of a clerk in a counting-house, though he still continued to suffer. In about a month from the first he experienced a second attack, and these had been repeated at intervals of two and three weeks, the last of which was a few days past. In the attacks he suffered violent pain in the abdomen, with constipation of the bowels. Flatulent eructations were almost constant, and his digestion was impaired. He was generally constipated, but the bowels had been latterly kept open by the daily use of purgative pills, prescribed by his former physician. By the same advice animal food had formed the principal part of his diet.

During this time he had constantly felt in the lower and right side of the abdomen, an uneasy and often painful sensation, with a feeling of fulness and weight, which was relieved by pressing on and raising that portion with his hands.

Being doubtful of the nature of the affection, I advised merely a farinaceous and laxative diet, restricting the quantity of animal food, with the use of frequent demulcent enemata, and cupping over the lumbar and iliac regions.

Age of the patient fifty-five; robust frame; sanguine temperament.

March 4th.—I was summoned to attend him in an attack which had commenced the preceding day. His bowels had been until the present time daily evacuated. He had been in violent pain during the night, the seat of which was the right lumbar, iliac and hypochondriac regions. Pressure excited pain. The stomach was irritable; vomiting frequent; a watery, greenish fluid discharged from the stomach; pulse nearly natural; no heat of skin. Cups were applied; the camphorated effervescing draught prescribed to allay the gastric irritability, and enemata of flaxseed mucilage thrown into the bowels.

5 *P. M.* Stomach tranquil; vomiting has ceased; pain continues; sinapism over the seat of pain; Ol. ricini. ℥j. every hour; whey for drink.

10 *P. M.* Cessation of pain; has hiccough; no fever; no evacuation from bowels. Calomel, gr. iv.; opium, gr. i. and repeat.

5th. Had a restless night; a copious alvine evacuation procured by an injection. Continue the oil, with whey for drink.

5 *P. M.* No pain; bowels not moved since morning; has occasionally hiccough; a sinapism to epigastrium; infusion of senna and solution of Rochelle salts, ʒss. every hour; injections.

11 *P. M.* Calomel, gr. iv.; opium, gr. i.

6*th.* The last night was more comfortable; stomach remains composed; hiccough has ceased; has pain, but less intense. Calomel, gr. i. every hour; omit other remedies. In evening opiate.

7th. Rested well; pulse continues natural; has had no passage; stomach tranquil; continues calomel with Infus. sennæ.; and Solut. sal. Rochelle every two hours.

Evening. Return of pain; bowels not moved; opiate at bed-time.

8*th.* Night was restless and disturbed from pain; no vomiting, but fluid regurgitations from stomach; constipation continues; same treatment.

9*th.* Pain during the night; slight fever; pulse has considerable tension; no motion; v. s. ℥viij.; fifty leeches to right iliac and hypochondriac regions.

4 *P. M.* Fever reduced; pulse softened; blood sizy, but coagulum flabby.

10 *P. M.* Has had an alvine evacuation of considerable consistency and deep brown colour, produced by an injection of flaxseed mucilage. Calomel, gr. ii., s. morphiæ, gr. $\frac{1}{8}$, every four hours.

10*th.* Night tranquil; no evacuation; no vomiting; ol. terebinth, gtt. v. every hour, with a Seidlitz powder in the intermediate time.

Evening. In same state; ol. croton, gtt. iv.; mucil. g. Arab. ℥ii.; ʒi. every two hours.

11*th.* Disturbed night; renewal of pain; no evacuation; borborygmi from commotion excited in the bowels by croton oil. It racks him, as he expressed himself, with pain. Fever existed, attended with excessive thirst; stomach rejects frequently a thin fluid. Small pieces of ice to be kept constantly in the mouth; fifty leeches to right iliac region; all medicine to be omitted.

5 *P. M.* Ice is very grateful, and has calmed the stomach; leech bites continue to bleed; pulse reduced. Calomel gr. viii.; acetat. morphiæ, gr. i.

10 *P. M.* Entirely free of pain; leech bites still continue to bleed; pulse feeble; hæmorrhage arrested by touching the bites with nitrate of silver.

12*th.* Has passed a tranquil, comfortable night; entire absence of pain; abdomen is more flaccid and supple; no motion from the bowels; stomach is quiet; borborygmi indicating movement of the intestines; chicken water for diet.

5 P. M. Remains in same state; pain in right hypochondriac; sinapism applied, and opiate pill repeated.

At 11 o'clock, P. M. had profuse discharge of extremely fetid black blood from the bowels; filled a chamber in a short time; great exhaustion ensued. The evacuations became involuntary; stimulants were unavailing in supporting the sinking forces, and he expired before morning, without a struggle.

The autopsy, at which I was present, was made twelve hours after death, by my friend and former pupil, Dr. Mutter, who devotes, with a commendable zeal, much of his time to investigations in pathological anatomy. The following is derived from report:—

Exterior.—Moderate degree of embonpoint; tympanitic distention of the abdomen to some extent; ulceration upon the right iliac region produced by a blister; leech marks upon the same; no peculiar rigidity of the muscles observed.

Abdomen.—Upon opening the abdomen, the peritoneum, both parietal and intestinal, exhibited traces of inflammation; varying, however, in their intensity in different situations. Along the attachment of the mesentery, they were most conspicuous. The vesical portion of the peritoneum presented a most singular appearance. Without exhibiting any of the usual evidences of the previous existence of inflammatory action, we found it studded with patches of a darkish-green colour, resembling very much the spots observed upon some species of the pippin apple, or those upon the belly of the common toad.

Omentum.—The omentum majus was spread out in situ, and exhibited traces of inflammation, particularly towards its lower edge.

Stomach.—The stomach was considerably dilated, and contained about half a pint of a thin grayish fluid. The mucous membrane of a grayish colour, good consistence every where, not much wrinkled, and not mamillated. It presented an appearance by no means of frequent occurrence, though nevertheless occasionally met with. The whole surface, but more particularly its pyloric portion, was studded with little depressions or pits, resembling somewhat those of the cutis, though not quite so large, which gave to it a reticulated or lace-like appearance. This appearance is not the effect of ulceration of the gastric mucous glands. Ruysch has observed analogous appearances in the mucous membrane of the stomach; and Santorini describes them as occurring in the duodenum. The stomach presented no traces of the previous existence of inflammation, nor were the gastric symptoms during life such as to create uneasiness, or to be other than those proceeding from its sympathies.

Small Intestine.—The small intestine was considerably distended by gas. It contained in its upper and middle thirds, a moderate quantity of a thin fluid, resembling that found in the stomach, whilst the lower third was filled with a whitish-clayey matter of the consistence of soft mush, and very fœtid. The mucous membrane throughout was of pretty good consistence, normal in its thickness, and a little coloured by its contents. The glands of Peyer were but very slightly developed. In the last foot or two of the ileum, but especially about the seat of the ileo-cœcal valve, the isolated follicles were considerably enlarged. We now come to the seat of the disease. Upon examining the right iliac region we were struck with the singular appearance presented by those portions of the ileum and colon contained in it. At the first glance it might readily have been supposed that a complete *knot* had been tied, by some means or other, in the intestine at this point. The caput coli very much distended, evidently contained within its cavity, some firm or fleshy substance, which body also projected for some inches into the colon. The appendicula vermiformis was no where to be found. The lower portion of the ileum was of its usual size, and exhibited traces of inflammation along its mesenteric attachment. Immediately over the usual seat of the ileo-cœcal valve, the intestine exhibited a wrinkled or puckered appearance, and was very firm. (Fig. 1. exhibits very well its appearance at this stage of the dissection.) Upon cutting into the colon to separate the diseased mass from its connexions, there issued forth a large quantity of *blood*, partly fluid, partly coagulated, mingled with the secretions of the intestine, and exhaling a very fetid odour.

On laying open the colon, a firm cylindrical body, seven or eight inches in length, and one and a half in circumference, rough on its surface from numerous small ulcerations, and of a deep mulberry-red colour, was seen projecting into the cœcum, through the ileo-cœcal valve. At its inferior extremity was a hard tubercle, about the size of a nutmeg, perfectly solid, resembling the tumour, to which it was adhering by a small pedicle. Immediately below this, and partly concealed by it, was an opening, four or five lines in diameter. This tumour was the inverted ileum, passing through the ileo-cœcal valve; the mucous membrane exterior, and the opening below was the orifice of its canal, communicating with the intestine above the valve. Through this passage, the fecal matter, when not too consistent or large, was enabled to pass from the small into the large intestine.

The mucous coat of the inverted ileum being divided, a large fibrous mass, of a dull-white colour, presented itself, lying between, and adhering to the peritoneal coats of the invaginated intestine. This mass was organized coagulable lymph, secreted from the serous membrane of the intestine, after its passage into the cœcum, and gave to the invaginated intestine its appearance of a firm, dense tumour.

The colon was considerably distended with gas, and contained a large quantity of blood. The mucous coat exhibited a dark purple-red, produced partly by being steeped in the effused blood, and in part proceeding from inflammation, for numerous arborizations and punctuated redness were found to exist when it was washed. The follicles were also enlarged, and some few ulcerated. The strips yielded by the mucous membrane were but from one to two lines in length, the membrane being generally softened.

The liver, spleen, kidney, and pancreas, exhibited no morbid phenomena. The bladder was contracted. Of the mesenteric glands one or two were enlarged, the remainder natural.

The ganglia of the sympathetic were of normal appearance.

The thoracic viscera were natural, excepting some ancient adhesions of the right pleura.

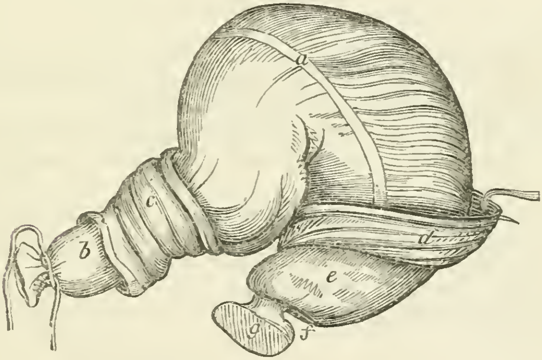
Observations.—The original attack of bilious colic, as it was called, must be considered as the epoch when the invagination of the ileum is to be dated. From that period, the patient had suffered uneasiness or pain in the right iliac region, with repeated relapses. The large fibrous mass formed between the peritoneal coats of the introverted intestine, with its advanced state of organization, must have been the work of time, and could not have been produced in the last attack. In this case is then presented the fact of an invagination of the intestine existing for several months.

The disposition or arrangement of the parts concerned in the disease, exhibits the manner in which a natural cure is possible, and probably is occasionally effected. Adhesive inflammation of the serous coats would glue the ileum and cœcum together at the point of invagination, while the invaginated portion sloughing away, would leave a free, unembarrassed passage from the small into the large intestine. A process of this kind appeared to have been set up in the present case, but hæmorrhage having ensued from the mucous coat of the invaginated ileum, exhausted the forces of the patient. The hæmorrhage was undoubtedly the immediate cause of death. An hour before it commenced, the patient was remarkably composed, and the symptoms presented nothing indicative of an immediate danger.

I may here remark, that with one exception, all the cases I have met with, called bilious colic, iliac passion, volvulus, &c., have acute inflammation, involving the ileo-cœcal valve, the consequent tumefaction, augmented sensibility, and irritability of which, have been the real causes of the constipation, presenting a mechanical obstruction to the passage of the flatus and fecal matters from the small into the large intestines. In the treatment, the reduction of this inflammation and irritability is the chief, if not exclusive indication. When that is accomplished, the evacuations will take place with facility.

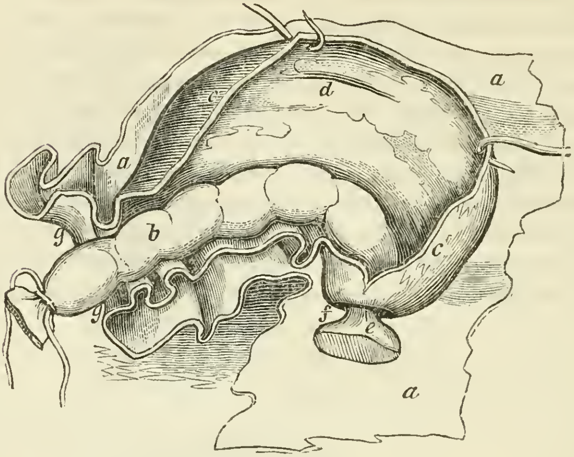
Explanation of the Figures.

Fig. 1.



a. The cœcum as it appeared before being laid open.
b. The ileum entering the cœcum through the ileo-cœcal valve.
c. The wrinkled or puckered appearance of the gut around the seat of the ileo-cœcal valve.
d. The colon turned back, showing the extremity of the invaginated ileum.
e. The lower portion of the invaginated ileum; the mucous membrane exterior.
f. The orifice of the canal of the ileum.
g. A tubercle formed by a swelling and hardening of the mucous membrane, closing the orifice of the intestine like a valve.

Fig. 2.



a. a. a. The cæcum and colon laid open.
b. The invaginated ileum passing through the ileo-cœcal valve into the cœcum. The serous coat presents.
c. The inverted part of the protruded ileum laid open, showing the fibrous mass between the serous coats. The mucous membrane exterior.
d. The fibrous mass lying between the serous coats of the entering and reflected portion of the invaginated ileum.
e. The solid tubercle at the extremity of the ileum.
f. The orifice of the intestinal canal.
g. g. The seat of the ileo-cœcal valve.

ART. VIII. *On the Apocynum androsæmifolium.* By WILLIAM ZOLLICKOFFER, M. D., F. C. P., late Lecturer on Botany, Materia Medica, and Toxicology, &c. &c.

THE genus Apocynum belongs to the class Pentandria, and to the order Digynia. It ranges in the natural order of *Contortæ* of LINNÆUS, and *Apocyneæ* of JUSSIEU.

This genus is characterized as follows:—*Folliculi 2, longi, lineares. Semina papposa. Corolla campanulata. Anthera mediocum stigmati cohærentes.*

Species androsæmifolium—*Foliis ovatis, glabris, cymis terminalibus, lateralibusque; tubo corrolla calycem superante.* The root of this plant is perennial; "stem herbaceous, erect, two to three feet high. Leaves opposite, ovate or oval, lanceolate, mucronate, and somewhat glaucous underneath. Corolla monopetalous, five cleft, white tinged with red. Nectary, five oval glands surrounding the germ, purple, viscid. Anthers scarcely as long as the corolla."

In the first edition of my Materia Medica of the United States, which emanated from the press in the year 1819, this indigenous vegetable production had a place. Subsequent to that period, some remarks, as coming from me upon its remedial virtues, were published in the "American Medical Recorder." Since the publication of my work, Professor Bigelow introduced the Androsæmifolium in his invaluable "American Medical Botany." Within the few years past, I have had very ample opportunities of establishing its therapeutic operation to my own satisfaction, in consociation with certain facts in connexion with the substances which are incompatible with its isolated medicinal display of action. It is unnecessary for me here to advance arguments in the support of the opinion of medical incompatibility, or of that display of operation that not unfrequently occurs between substances when brought into immediate contact, by which their virtues are rendered inert, or so modified, as to change their action, and cause them to assume characters, entirely opposite to their original or uncombined effects. This part of medical learning is sufficiently well established.

According to Walter and Michaux, this species of Apocynum is an indigenous plant, growing naturally from Canada to Virginia. In Maryland it is to be seen almost every where. Here it is recognised by the common and local appellations of silk-weed, milk-weed, snakes-milk, dogs-bane, &c. It is very incorrectly supposed by the peasantry to possess noxious properties. It is a lactescent plant, emitting upon the slightest incision into its cortical part a profuse milky exudation, which, when exposed to atmospheric action, assumes the consistence of caoutchouc, and burns with considerable vividness, with flame analogous to that which results from the combustion of alcohol.

Chemical composition.—Resin, caoutchouc, and mucus, are the chemical constituents entering into the composition of the Androsæmifolium.

Solubility.—Its active properties are soluble in water and alcohol. Macerated for seven days 3240 grains of the contused bark in alcohol, from which I procured, after carefully passing it through bibulous paper, and evaporating it over a water bath, 178 grains of alcoholic extract, and 28 grains of watery extract. Inversely from the same quantity I obtained 160 of watery, and 104 grains of alcoholic extract.

Incompatible substances.—It should not be given in combination with opium, when emesis is intended to be produced by its administration, not only because it frustrates its emetic action, but in consequence of it so modifying its operation as to cause it to display its effects upon the surface. Capsicum anuum completely controuls its emetic operation. In these instances I have taken a sufficient quantity to excite vomiting, in combination with five grains of the powdered Capsicum anuum, but without the least effect whatever.

Vegeto-anatomical examination.—Twenty-five hundred and thirty-six grains of the recent root afforded upon a separation of the different parts entering into its structural organization, 1726 grains of cortex or bark, and 810 grains of ligneous or woody part. Its activity I have found resides exclusively in the bark, which composes rather more than two-thirds of the root.

Medical virtues.—It is tonic, emetic, and diaphoretic. In doses of from ten to twenty grains it is admirably calculated to improve the tone of the digestive apparatus, and through this medium produce a corresponding impression upon the general system. Forty grain doses excites emesis very promptly, without inducing scarcely any previous nausea. It is therefore a mild and effectual emetic, and deservedly entitled to a conspicuous place in our Pharmacopœias and apothecary shops. It is diaphoretic when given in combination with opium, *only* in the dose of forty grains with one of opium; exhibited at intervals of three or four hours.

Art. IX. *Case of Shoulder and Arm Presentation in which Death took place from a Detachment of the Placenta.* By John M. B. Harden, M. D. of Liberty County, Georgia.

THE following, to me very interesting and instructive case, I have thought might prove alike interesting to the medical public, as it may direct the attention of the younger members of the profession, who, like myself, may be called "in an hour when they think not of it," to a similar responsibility, to one of the most serious and often complicated species of labour that can possibly be encountered by the accoucheur, where there is at the same time any promise of a successful termination to both mother and child. It will here be perceived that a case dangerous and difficult in itself, may be complicated with other and no less serious accidents, which are alone to be successfully met by the discerning eye and prompt skill of an attentive and prudent practitioner; and although from its termination I may not be enabled to lay claim to the distinction in this case, still I feel that if I may, from an exposition of it, only "point an indication" to others, it is my duty to do so, regardless of all consequences to myself as an individual.

On the 9th of January, 1832, I was suddenly called up at midnight to visit in consultation with Dr. H. then of this place, a negro woman, between twenty-three and twenty-five years of age, in labour with a second or third child. She had been in labour about sixteen or eighteen hours. I was informed by Dr. H. that it was a case of arm and shoulder presentation, and that having made some ineffectual efforts to deliver the child, he was not disposed to proceed further without assistance. Upon my arrival I found it to be the first presentation, according to Dr. DEWEES, in such cases—the right arm being down, with the back anteriorly, and the palm posteriorly and greatly swollen. The waters had come away early in the labour; the os uteri was well dilated and dilatable; the fundus firmly contracted on the body of the child; the pains very severe and frequent, indeed almost continual. Believing the only way to proceed was to turn and deliver, if this was practicable, I suggested the propriety of attempting it. This the doctor undertook, but soon abandoned it to me. I immediately introduced my hand into the uterus, which I found in the condition above described, and endeavoured by cautiously insinuating it between the child and the parietes of the uterus, to reach the feet, but so violent and constant were the contractions, that I found it utterly impracticable, and soon desisted. The alternative was to wait a "spontaneous evolution," or by blood-letting to overcome the contractions of the uterus, so as to enable us to effect the turning—a plan so highly recommended by Dr. Dewees in such cases. The latter was determined upon. The arm was immediately bound up and a vein opened, but the blood not flowing freely from the orifice, it produced only an approach to syncope. I seized this opportunity to turn, and to my gratification, I found the contractions not so violent, and expected to accomplish it without difficulty, when to my great surprise the action of the uterus *suddenly ceased*, and I felt the placenta distinctly floating in fluid. I immediately remarked what had happened, and proceeded without delay to seize the feet and bring them down, hoping that the contractions would soon take place again. This I now accomplished with great ease, and after delivering the whole body, waited a short time to watch the result. There was no return of pain. The woman soon became dangerously exhausted, the pulse gone, the extremities cold, and indeed before we were aware of the urgency of the case, it was too late to bring back the ebbing tide of life.

Remarks.—1. I did not make an autopsic examination. I regret this the more, as it would have thrown more light on the immediate cause of death in this case. But we may safely conclude, I think, from the circumstances of the case, that it resulted altogether from the *loss* of blood. I did suppose at one time that there may have existed a rupture of the uterus, but the absence of many of the prominent symptoms attending on rupture, such as the passage of the child into the cavity of the abdomen, the intense and sudden pain felt on the occurrence of such an accident, renders it highly certain that such was not the fact. We conclude, therefore, that concealed accidental hæmorrhage from detachment of the placenta was the immediate and only cause of death. Furthermore, neither the contractions of the uterus, nor the force used in my second attempt to turn, was sufficient to have occasioned a rupture, so that if it did exist, it must have occurred antecedently to the bleeding from the arm, when the contractions were sufficient to have occasioned the escape of the child from the uterus, which did not take place.

2. The cause of the detachment of the placenta is not at all obvious, since there was evidently no placental presentation to render it unavoidable, nor did I feel the placenta with my hand until after its separation, so as to have induced me to believe that it arose from manual interference. It took place too before the situation of the child was altered, for it was not until after the complete relaxation of the uterus, induced by the atony into which it was thrown by the direct loss of blood, that I succeeded in reaching the feet and bringing them down. It must have resulted then, either from the violent efforts of the uterus previously, or from the atony superinduced by excessive action and loss of blood from the arm; the former of which hypothesis I consider most likely. I am the more inclined to this opinion from the following remarks of Dr. Denman:—"Sometimes," says he, "the whole, or a large part of the placenta will be separated *suddenly*, without any accident or symptom that could give warning or apprehension that such an event was to be dreaded. The separation of the placenta may then happen previously to the commencement, and it is less surprising that it should sometimes occur during any period or stage of labour."—*Francis' Denman*, 1821, *p*. 486.

3. "Spontaneous evolution" in this case seemed to offer a forlorn hope, for, as was said above, the waters had long come away, and

the fundus of the uterus "was firmly contracted on the body of the child." And indeed so "tightly wedged was the shoulder in the inferior strait," that although the os uteri was fully dilated, so as to offer scarcely any resistance to the introduction of the hand, yet I am fully persuaded that even had I succeeded in my first attempt to reach the feet, there would have been great difficulty and danger in the attempt to turn.

4. From the above case, we are fully persuaded of the utter impracticability of turning the child in this stage of labour, and in such a presentation, so long as the fundus continues its contractions, even although the os tincæ may be *fully dilated*, or at least the force necessary to be used in such an attempt, would greatly endanger a rupture of the uterus. To overcome these contractions, there is no plan which promises so much as blood-letting, ad deliquium animi, and to induce this state with as little loss of blood as possible to the system, we would adopt in a *similar case*, and recommend that the woman be placed in a standing or sitting posture, and the blood drawn from a *large orifice*, and continued until there is at least an *approach to syncope.**

5. There was no contraction after the turning, although the *whole body* of the child was delivered. This arose, no doubt, from the general and local exhaustion into which her system and uterus were thrown by the general and local bleedings. Had cold applications and frictions over the uterus, together with gentle stimulants, been used in time, she may have possibly survived, but the hæmorrhage being concealed, exhaustion and death came on most unexpectedly and so suddenly as to prevent a timely resort to these remedies, which may have prevented the unfortunate result.

Liberty County, Georgia, May 14*th*, 1833.

ART. X. *Sketch of a Remarkable Case of Splenitis, supposed during Life to be Scirrhous Ovarium.* By WILLIAM MARKLEY LEE, M. D. of Kerslaid, S. C.

STELLA, an African wench, æt. 40, and the mother of four children, was led to consider herself pregnant in April, 1831, in consequence of the interruption of the catamenia, and the other indications of conception: she continued to follow her usual avocation as a field-hand until the close of that year, when the gradually increasing size of the abdomen, the œdematous condition of the lower extremities, and more especially the absence of all internal motion, induced her master to consider it a dropsical affection. In January, 1832, I located myself at Packsville, where he resided, and was requested to visit her. I endeavoured to draw from herself a history of the preceding symptoms, but from her remarkable obtuseness of intellect, could obtain no satisfactory information. Her only complaint was of the weight of the abdomen pressing upon the ossa pubis while standing, and of dyspnœa in the recumbent posture; her pulse was natural. In conformity with her master's views of the pathology of the disease, he had treated it by occasional doses of jalap and sup. tart. potass, which relieved the anasarca of the ankles, but produced no diminution of the abdominal tumour. On examination, I found the abdomen fully as large as at the expiration of the usual term of pregnancy; no fluctuation whatever was perceptible, but about three inches above the left os pubis, and the same from the linea alba was a circumscribed tumour of an eliptical form placed transversely, and not adherent to the abdominal parietes. Its situation, the simultaneous interruption of the menstrual discharge, and the absence of fluctuation in the tumour, induced me to pronounce it scirrhus of the left ovarium, for pregnancy it could not be, as the dimensions of the tumour were apparently not above three by four inches. The œdema of the ankles I ascribed to the pressure of the tumour upon the vena cava ascendens, or the lymphatics; still some symptoms were to me inexplicable; as the tumour itself did not appear to exceed the size of an ostrich egg, and I could not attribute the general magnitude of the belly to enlarged mesenteric glands, for she was neither emaciated nor subject to lienteric diarrhœa; on the contrary, her appetite was good, even to voracity; her digestion was healthy, but her bowels rather tardy. Led by my view of its pathology, I directed for the relief of the anasarca of the legs, warm alkaline pediluvia, and a horizontal posture of the lower extremities while sitting; for the latter, as she would not consent to a surgical operation, offering the only ostensible method of relief, I could do nothing, and was compelled to leave the case to nature. The foot baths effected all I desired, but the abdomen continued to increase in magnitude until the beginning of April, when I was sent for in haste, as she was thought to be dying, but before I could reach her, she had expired.

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* This plan of treatment was many years ago recommended by Dr. Dewees, and has been repeatedly practised by him with success.—ED.

Autopsy twelve hours after death—The abdominal viscera presented a healthy aspect, but the stomach was thrown into an oblique position; the slaty colour of the tumour in the left iliac region, forcibly reminded me of the spleen, and on passing my hand under a fold of the omentum, which partly covered it, I was surprised to find it to be in reality the spleen, increasing in diameter as it approached the diaphragm; when removed its dimensions were twenty-seven inches longitudinal circumference, sixteen inches and three-quarters transverse circumference, weight five pounds and a half.

I have often seen enlargements of the spleen extending beyond the linea alba, and of an oblate form; they were always the relics of chronic intermittents; as far as I can learn, Stella's case was truly a pathological anomaly; it was not preceded by intermittent fever, and the uniform increase of the abdomen, the form and location of the tumour, and the simultaneous interruption of the catamenia, led me, and I think would have led any other physician, to pronounce it ovarian disease.*

I have in vain endeavoured to recollect the details of any analogous cases, met with in the course of my reading during a residence of eight years, (student and physician,) in Charleston; I have sought in vain for such in my medical library, and have described the case to many of my professional brethren, but none were acquainted with any similar affections. This woman was a dirt-eater, and so filthy in her habits, that her natural complexion could not be known, her skin being covered with soot in consequence of her constantly hanging over the fire.

My treatment would be alterative doses of mercury at night, aided by frictions of tinct. of iodine, or cataplasms of stramonium, as recommended by Dr. Cunningham, of Arkansas, (N. A. Med. and Surg. Journ. Vol. V.) Tonics, so beneficial in ordinary splenitis,† or more properly, congestion, rather than inflammation, would be here probably useless.

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* Soon after I had taken charge of the above case, I was requested to visit a young white woman, at a considerable distance from Packsville, who for four years had exhibited the appearance of pregnancy; her parents were so fully persuaded that she was bewitched, that argument and ridicule were equally unavailing; I found her in precisely a similar situation as Stella, except that from her excessive corpulence, she was confined to her bed, and could not even turn over without assistance: six or eight eminent physicians had visited her at different intervals of time, and had unanimously pronounced it ovarian disease.

† Since writing the above, I have succeeded in curing several cases of splenitis by Fowler's mineral solution.

Art. XI. *On the Pathology and Therapeutics of Cholera Maligna.* By Hugh L. Hodge, M. D., one of the Physicians of the Almshouse Infirmary, and late Physician to the City Cholera Hospital, No. 4.

"A PUBLICATION is not rendered improper or needless, because works of a similar nature have preceded it. Little would ever issue from the press if this principle were admitted." Thus writes an eminent and modest author, whose works have proved of great utility. So much however has been written on epidemic cholera, that the subject seems to be exhausted, and the public mind to be almost satiated. The fact, nevertheless, must be acknowledged, that although this disease has been investigated by the most eminent physicians in Asia, Europe, and America, and although it has been treated by every conceivable variety of empyrical effort, yet the pathology of cholera, and of course the principles of treatment, are not established.

This being the case, publications should be multiplied. Every individual who, by observation or reflexion, has attained a result, even on one point of pathology or practice, satisfactory to himself, should cast such result before the public to assist, if possible, in elucidating the pathology and therapeutics of an epidemic, which in its desolating course from east to west—from the Ganges to the Mississippi—has set at nought, not only the dogmas of the schools, but also much that was venerated and trusted in medical science. The charge of vanity, or of the affectation of superiority, should not therefore be urged against any new recorder of facts or opinions. The minds of men differ as much as their physiognomies, and every man who is capable of independent reflexion will stamp the character of his own mind on his writings, and may thus facilitate the onward path of science.

Under the influence of these opinions, I would publish, even on so trite a subject as cholera maligna, the result of personal observations on this epidemic. The chief object will be, by analyzing the incipient and confirmed symptoms of the disease, to determine the true pathology of cholera maligna, so denominated, and thence to deduce scientific principles for its management. "Experientia docet"—experience must be the test of all pathological doctrines. To say that the pathology is true, but the practice necessarily resulting is injurious, is absurd—as such admission would destroy the very object of pathology, and paralyze the efforts of every medical philosopher: for what advantage can accrue should the nature of a disease be firmly established by the laborious investigation of the anatomical arrangements and physiological state and functions of the part affected—of the symptoms which characterize its morbid state, and the changes evinced by the knife of the dissector, if, after all, the therapeutical precepts deduced from it cannot be conveyed to the bed-side? On the contrary, if the principles resulting from such scientific investigations will stand the test of experience, the advantages resulting to the profession and to the public, are immense. Not only will a suitable class of remedies be designated, but the appropriate time and circumstances under which each agent should be employed will appear, while the circumscribed boundaries of mere experimental knowledge will be almost indefinitely enlarged. One principle is worth a thousand facts. A principle is indeed nothing more than a general fact, which, resulting itself from individual facts, is the prolific parent of an innumerable progeny.

My opportunities for observing cholera have been as varied as that of most practitioners of this city. In the spring of 1819, I had charge of several cases of the disease in Calcutta, India, among the native Hindoos and the American sailors, being the vestiges of the desolating epidemic of 1817–18. On the breaking out of the epidemic in this city, I prescribed for the first cases at the Alms-house Infirmary with every facility for post mortem examinations, which were always made. Subsequently I took charge of the City Cholera Hospital, No. 4, and was during the whole epidemic constantly and actively engaged in private practice. From these sources, the varieties of the disease, arising from location, natural temperaments, morbid predispositions, depraved habits, and complications with other disorders, have been often observed, and thus sufficient data been afforded for analyzing the symptoms of cholera, and separating those which are peculiar, from those which it has in common with other complaints. In giving this analysis and its results, no claim is made for strict originality, but the hope is entertained, that truth will, in some respects, be elicited, and the cause of humanity benefited. Believing that this disease essentially resembles many with which the profession are familiar, and that it can be managed in a rational scientific manner, with as much prospect of success as any analogous complaint of a malignant aspect, no just reason can be discovered for abandoning the principles of medicine, or for confiding in the wild and contradictory assertions of empiricism.

As the object of this essay is to indicate principles for the treatment of cholera, deduced from its *pathology;* and as its pathology must be established by a careful examination of its characteristic symptoms, and of its effects as exhibited by post mortem investigations, a detail of facts becomes necessary as a basis of subsequent reasoning. But certain general propositions must be previously stated respecting disease in general, that the following observations may be at least understood, even if they should not be approved or adopted.

It may be proper to disclaim all belief in *ontology*, as it has been termed by the Broussais school, that is, in the idea that disease is an *entity*—a being—a something added to the system. This is a notion which, I doubt, few physicians of respectability have ever entertained, although it has of late years been the subject of severe sarcasm. On the contrary, disease is virtually disorder, an alteration of the natural state or actions of the tissues or organs of the economy. A knowledge, therefore, of the natural state or actions of parts, in other words, of physiology, is requisite for understanding their morbid condition. Physiology demands a minute acquaintance with the structure of the body. Anatomy and physiology are therefore the true foundation upon which pathology can alone rest. Unfortunately, these sciences, especially physiology, are still imperfect, and hence there are various and honest differences as to subjects of fundamental importance.

That the expressions hereafter employed may be understood in the precise sense intended, I would remark, that, agreeably to Bichat's arrangement, the body is regarded as composed of organs, and these of tissues. The nervous, vascular, and absorbent tissues may be called general tissues, as entering into the composition of all organized portions of the body—the nervous being of two kinds, ganglionic and cerebro-spinal, each distinct and peculiar, but intimately connected by communicating branches. It is believed, that there is but one vital property, viz. *irritability*, or the capability of receiving impressions, of being acted on; and that the evidences or manifestations of this property vary in different tissues—some presenting the phenomena of contraction, as the muscles; others of expansion, as the iris, nipple, &c.; and others, of sensation, as the nerves; hence we speak of contractility, expansibility, and sensibility, which are merely irritability modified by tissue.

Every tissue maintains its own peculiar vital susceptibilities in all its various combinations in the different organs; a remark peculiarly applicable to the general tissues, necessary for organization, as nerves, blood-vessels, and absorbents. Hence irritations of these tissues present analogous phenomena in all the organs; when severe they often involve the whole economy, forming what are termed general or constitutional diseases, as contradistinguished from similar affections, involving but a portion, often a minute portion of a tissue; thus we observe *general*, as well as local, nervous or vascular diseases.

There is great truth and value in the division of life, as it regards its phenomena, (for of life we know nothing,) into *organic* and *animal*, as has been happily conceived by Bichat. Organic life, as it is summarily termed, having respect to the changes which occur alike in all animated beings, vegetables and animals, such as circulation, respiration, nutrition, secretion, and absorption; while animal life, or the life of relation, is peculiar to animals, and distinguishes them from vegetables: its phenomena are those of sensation, perception, motion, volition, &c. The phenomena of animal life depend solely on the cerebro-spinal system of nerves; those of organic life on the vascular system, (perhaps on the ganglionic system of nerves;) hence every part of the body, not excepting the brain and nerves, is the subject of organic life and its peculiar diseases, while the brain and its dependencies alone manifest the disorders of animal life.

The functions of the two lives are, from the anatomical arrangements of the nerves and blood-vessels, necessarily most intimately connected—as any disturbance of the circulation in the brain must affect the medullary mass; and nervous excitations or depressions have more or less influence over the vascular system, as the experience of every individual can testify. Hence these general systems—the nervous and vascular tissues—the representatives of organic and animal life—are usually simultaneously and similarly deranged. In many cases, however, they are observed in very opposite conditions; great depression of organic life, with a natural or excited condition of animal life, and sometimes dulness, stupor even of the brain when the general and local circulation is apparently undisturbed. This singular fact, evincing the partial independence of the brain and nerves on the vascular system occurs, there is reason to believe, very frequently, but has been exceedingly overlooked by pathologists. It no doubt will aid exceedingly in reconciling many apparent contradictions in the reports of experienced physicians respecting the treatment of diseases. The circumstances under which these opposite conditions of the nervous and vascular apparatuses occur, have not been accurately pointed out, nor their causes detailed, but they are frequently seen in all the variety of neurotic diseases, are almost essential to the existence of mania a potu, and, I have no doubt, form one of the leading peculiarities of cholera maligna, attention to which is of the utmost importance, and the neglect of which has been the cause of much of the disappointment and failure so generally experienced in its management, as will hereafter be exemplified.

The tissues thus endowed with irritability can be acted on by external or internal causes, which may be arranged under two general divisions—*irritants* and *sedatives*, or those agents which excite, and those which depress vital phenomena. Irritants acting on the irritability of a tissue cause irritation; sedatives cause sedation; the former being of course a state of excitation, the latter a state of depression; and hence directly opposed to each other.

Irritation and sedation should always, when possible, be distinguished from two other conditions with which they are almost universally confounded; viz. strength and weakness.* Strength and weakness have reference to an increase or diminution of power; irritation and sedation to similar changes of excitement or action. Irritation often exists where there is great debility, and sedation is continually noticed where the strength is very great. An individual greatly debilitated by hæmorrhage may have a high fever; a strong man may be torpid from exposure to cold.

Another remark is of importance, that states of irritation or sedation, owing to peculiar laws of the economy, are often secondary, not directly resulting from the original cause; thus febrile irritation does sometimes succeed great abstinence or profuse hæmorrhages; reäction after these depressing causes. On the contrary, great torpor, *i. e.* extreme sedation, is often induced by excessive excitement; thus gangrene may follow inflammation; prostration may be the consequence of fever. Analogous to this, is immediate depression or sedation from an overwhelming irritant, as the prostration which results from extensive burns, from gun-shot wounds, or other severe contusions.

Irritation or sedation of the blood-vessels necessarily involves changes in the circulation; of themselves important and at the same time aggravating existing phenomena.

"*Ubi irritatio ibi affluxus*" is now an axiom in medicine, and always true if irritation be restricted to organic life, but if extended to the organs of animal life will very frequently prove deceptive. Irritation increases not only the flow of blood to a part, but also its transit and exit from the same part. There is every evidence of increased circulation derived from the bright arterial colour, the heat, the increased secretions, the enlargement of the supplying vessels, and also of the veins carrying away the blood.*

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* Vide American Journal of Medical Sciences, Vol. X. p. 93, for the author's views on this subject.

On the contrary, sedation is marked by decided evidence of a diminished circulation; the part becomes cold, blue, or livid; the vasa afferentia and vasa efferentia are diminished in size and activity, and there is a diminution or suppression of the natural secretions. As a certain degree of tension and firmness exist where there is irritation and a rapid circulation, so sedation and a diminished circulation render a part soft, doughy, inelastic. Should the sedation occur suddenly, some blood may be arrested in the smaller vessels, at least for a time, increasing the lividity of the surface; but this is comparatively rare externally. Internally this collection of blood is common; the veins especially become turgid with dark grumous blood, sometimes to an enormous degree, oppressing the already torpid organs, and often preventing their natural efforts to reäct. These are *passive congestions* of blood, in which the fluid is arrested *in* a part, and not actively determined *to* a part, as in the case of irritations; for in these last, the blood would be bright, well arterialized; the pulse active; the organic actions increased, &c. These are *active congestions.* The consequences of active congestions are well known, but those of passive congestion have been less noticed, and of course less understood. We usually observe serous or bloody effusions, (not secretions,) venous hæmorrhages or complete stagnation of the blood, and consequent death. Examples are numerous in the influence of severe cold on the internal viscera; in gangrene; in the cold stage of intermittents; in malignant forms of fever, indeed in malignant diseases generally; in many convulsive affections, &c. In all cases there is diminution of vital heat, a livid condition of the parts, diminution of force and frequency of pulse, and a partial or complete stagnation of the circulating fluid.

There is also a remarkable contrast in the condition of the blood in active and passive congestions, (a very positive proof of their essential opposition.) Active determination of fluids to a part is almost universally accompanied by a florid, highly arterialized, or vitalized state of the blood, which, when effused, coagulates firmly; the coagulum retaining the red globules, and expressing an abundant and pure serum. In well-marked cases, the phenomena characterizing inflammatory blood are noticed, such as the firm coagulum, its cupped form, adapted to the shape of the vessel, the buffy coat, &c. Passive congestions present us a dark-livid "venous" blood. In some cases, this blood, when effused, forms a soft coagulum of large size; the coagulum retaining much of the serum, but often suffering the red globules to escape, so as to give the whole separated serum a reddish tinge. It sometimes happens that the coagulation hardly occurs; the blood is excessively black; little separation occurs between the constituent parts; the serous or thinner portions being livid or black, from retaining the colouring matter of the blood, while this colouring matter itself no longer consists of *globules*, for these seem to be broken down or destroyed. This constitutes the "dissolved blood" of authors.

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* Vide North American Medical and Surgical Journal, Vol. VI. p. 23 and 34.

One important remark should be subjoined, which explains why the state of sedation and congestion has been so frequently denied to exist, and all its phenomena referred to irritation, viz.—the complication of active and passive congestion in the same case. It not unfrequently happens that when a passive congestion is induced, irritants are subsequently applied to portions of a tissue so circumstanced; or even prior local irritations may exist, by which blood is determined actively to the same tissue, greatly enhancing the dangers of the case, and demanding the most energetic measures for the safety of the patient. Examples we shall have occasion to give, but would now mention the cold stage of fever complicated with abdominal inflammations; passive congestion of the lungs complicated with bronchitis, or pneumonia, as often seen in asthma; convulsions with passive congestion, aggravated by the administration of stimuli, &c. *Post mortem* examinations will evince the alterations from inflammation, while the indications of passive congestion have often disappeared; hence the morbid anatomists seem justified in referring the phenomena, during life, to active, rather than passive congestion, without reflecting on the severity of the preceding disease, and the comparatively trifling evidences of inflammation.

The above views may seem trite to many, and novel to others; by some they would no doubt be disputed, but on appeal to clinical observation, I think they will be found substantially correct, and also in accordance with the common experience of the profession. Should this be the case, there will be a solid foundation for the division of diseases into two great classes—those caused by irritants and those by sedatives—diseases of *irritation* and those of *sedation*. Each of these may be complicated with each other, be modified by the innumerable variety of causes, (for no two agents produce precisely the same effects,) by temperaments, constitutions, habits, strength, age, sex, climate, locations, and various other general agents, and especially by the organs and tissues primarily or secondarily affected. Divisions and subdivisions may hence be greatly multiplied; nevertheless, a careful philosophical analysis will, I believe, lead us to the above simplification of diseased actions.

Diseases of irritation (of organic life) involve active determination of fluids to a part, or induce general vascular excitement; hence active hæmorrhages, acute dropsies, inflammations, febrile affections, &c.

Diseases of *sedation* are accompanied by passive collections of blood, (the retention of fluids in a part;) hence passive hæmorrhages and effusions, the various congestive forms of disease, and all the varieties of malignant diseases. But, as already intimated, we seldom in practice meet with simple forms of disease; diseases of irritation and sedation are continually complicated, one with the other, and modified by various circumstances. Still the essential predominance of one class of actions can be almost always detected, affording a foundation for appropriate treatment, to be regulated according to the peculiarities of the case.

The treatment of diseases of irritation is by sedative measures—those which diminish action, whether by a direct or indirect influence on the part concerned. They need not be particularized, as they are recognised by every one under the title of antiphlogistic remedies.

The treatment of diseases of sedation is by stimuli, local or general. These, by exciting the organic actions, not only counteract the causes of depression, but also the disposition to passive congestion with its unpleasant consequences. Should stimuli alone not be adequate for this purpose, much science and judgment will be demanded in endeavouring, by more direct methods, to unload the congested vessels that reäction may ensue. Hence in moderate cases, little difficulty is experienced, but in the severer forms of sedative and congestive diseases, the most judicious and experienced practitioner, regulated by the best medical principles, cannot always command success; nevertheless he will often triumph under the most untoward circumstances, as changes of structure and disorganization seldom occur in diseases of sedation unless complicated with irritation in particular tissues. The details of this practice will be given when speaking of the management of cholera maligna; a disease which, I shall endeavour to prove, is essentially one of sedation of organic life, with irritation of the cerebro-spinal system of nerves, (animal life.)

In the preceding observations having stated, without intending at present to defend the pathological principles involved in the following investigation, a statement of the phenomena of cholera maligna, as observed by the author, will be made as the foundation of future reasoning.

Respecting the *causes* of cholera maligna, I have few observations to make. They may, for practical purposes, be divided into general and local; the former embracing the epidemic influences which are essential to its prevalence, the latter the peculiar circumstances which facilitate its development in certain places and in particular individuals.

Of the essential or epidemic cause we know very little respecting its source, nature, or modus operandi. From its history, which has been so frequently detailed, we may assert that it does not exist as an ingredient or component part of the atmosphere, but as a separate and independent agent. Its influences, however they may have been modified, have not been controlled by the heats of Hindostan, or the rigors of a Russian winter, nor successfully opposed by the seasons of the year—by winds, however regular or powerful, by forests, mountains, deserts, or oceans. They have defied, not only these natural barriers to the progress of pestilence, but every restraint suggested by science or presented by experience. The independence of this agent on the atmosphere has been exhibited, not only by the history of its progress from country to country, but by its apparent fickleness in every district it has invaded, not affecting all portions at once, or in regular succession, as the atmospherical variations of temperature, but like the thunder-storm or the whirlwind, pouring its destructive influences on devoted spots, while all around may be tranquil and safe. When prevalent in a given place, few escape its influence, but experience demonstrates, that *local* causes greatly favour its appearance and its ravages. These local or particular causes have reference to external circumstances, and also to the peculiar temperaments, constitutions, habits, &c. of individuals. They need not now be particularized, as they are noticed by most of the writers on cholera maligna, and are the foundation of all the sanatary measures for cities and individuals, which have been so successfully employed in most districts of our country. "Avoid exciting causes" has been the universal and important admonition under the supposition that all were predisposed by the general cause which gave character to the subsequent affection.

Although thus ignorant of the origin of the epidemic, and of the laws regulating its progress, we may determine to which of the two great classes of causes, irritants or sedatives, it belongs, by examining its effects on the animal system. To accomplish this object most effectually, the influence of the epidemic must be detected as early as possible, and be traced through the different stages of the complaint to recovery or death; thus, light may be thrown not only on the character of the cause, but on the nature or pathology of cholera.

The influence of the epidemic cause on the animal system may be advantageously considered under five general heads; the 1st, including the precursory symptoms; the 2d, the symptoms of the first or active stage; 3d, those of the second, or collapsed stage; 4th, those of reäction, constituting the third stage; and 5th, the appearances on dissection.

1st. *The precursory symptoms* vary exceedingly in different individuals, whose temperaments, constitutions, and habits, do not correspond. In general, they are those of oppression, with some nervous disturbance. The individual is easily fatigued; he complains of a general unpleasant feeling, (malaise,) with sensations of fulness about the head, chest, but especially of the abdomen, which seems to be enlarged. A little exertion may induce a palpitation of the heart, or oppression of breathing; there is often giddiness, dulness of intellectual faculties; appetite is impaired, and food taken oppresses and disturbs the viscera. Bowels are torpid; frequently a diarrhœa or dysentery supervene; the discharges, although often containing feculent matter, are of a light colour, sometimes pale-yellow, grayish, or even whitish at this early period. The surface of the body is paler, but of a darker hue than natural, as also the lips and tongue; there is less urine secreted; there is a coolness and clamminess of the skin, and some slight sensations of rigors, at least these are easily excited by a draught of air, and by placing the feet on a cold surface. The pulse is almost always slow, sometimes soft and full, at other times contracted and slightly tense, forming the oppressed pulse of authors. Should blood be drawn, it will be observed darker than on ordinary occasions; the coagulum will be large, soft, and the apparent proportion of serum small. The patient has often irregular pains in the back and limbs, but complains especially at night of occasional cramps in the extremities, particularly in the calves of the legs; the parts remaining tender on pressure. He is easily agitated or alarmed.

These precursory symptoms, known by the term "cholerine," vary in duration from a few hours to several days; often they are never observed; the decided symptoms of cholera appearing at once—no dysentery or diarrhœa even preceding the attack. Hundreds, indeed thousands have been affected by them without any further evidence of disease, and it perhaps may be safely asserted, that ordinary prudence with judicious directions will usually prevent the development of the complaint. But this is not always exercised, hence we often have—

2d. The symptoms of the *first stage of cholera.*—The attack of cholera is usually sudden, and varies, as to what is apparently the first symptom, in different individuals. Perhaps in most cases, there is a profuse discharge of a grayish or whitish fluid from the rectum; the patient is much distressed without positive pain, and has often nausea and sometimes vomiting. The first evacuations per rectum, are often mingled with feculent matter, but still of a light colour; afterwards they become thinner, having the appearance usually of oat-meal gruel, consisting of a serous fluid filled with a flocculent matter of some slight consistence. Afterwards the discharge becomes more watery, and seems, in many instances, to consist of pure serum. The vomiting is first of the contents of the stomach, should any ingesta be present: afterwards of a light-coloured fluid, with few flocculi, more like serum, or the drink which may be given.

In other cases, the patient complains almost exclusively of the nausea and vomiting, discharging every thing taken into the stomach almost immediately, while the bowels are but slightly and sometimes not at all disturbed.

Again, I have seen cases in which there was no vomiting or purging, the patient complaining perhaps of some nausea and feelings of oppression and malaise, but would hardly regard himself as seriously indisposed, were he not suffering from cramps in the muscles of voluntary motion, particularly of the legs, to him the first and only indication of disease.

Purging of light-coloured fluids, vomiting or cramps appear therefore to be the primary symptoms, and are so indeed to the patient, and to the inexperienced physician; but on attentive examination, the whole physiognomy of the patient, and all his vital actions as far as can be judged, will be found more or less deranged prior to the occurrence of purging, vomiting or even spasms. There is often a wild, anxious, timid expression of the countenance; the features are contracted; the eyes sunken; the secretion of tears diminished; the colour of the skin is dark, sometimes bronze-like, with a purplish appearance of the lips, tongue, mouth and fauces; the skin and mucous membrane of the mouth are cool; the extremities often cold; the hands and feet contracted; the nails purplish, with an inelastic condition of the surface generally, which with the mouth and tongue remains moist. The mind of the patient is not materially affected; there is at this stage usually anxiety and restlessness; sometimes giddiness, or sense of fulness or enlargement of the head; the respiration is slow, marked by sighing, and a feeling of oppression referred to the lower portion of the chest, especially about the heart.

The breath of the patient is usually remarked as being less warm than natural.

The pulse I have found in this stage to be *oppressed*, sometimes it is weak and tremulous when the vital functions are still active, but usually the pulse is small, contracted, and slow; often with considerable tension, analogous to the apoplectic pulse of authors, but having seldom the same degree of force. As the symptoms advance, the pulse becomes softer, smaller and weaker, prior to the actual occurrence of the second stage.

In the abdomen there are perhaps more unpleasant sensations, referred chiefly to the epigastric region. These sensations are those of stricture, of weight, of fulness, rendering the patient very restless, and aggravating the disposition to full inhalation. In most cases, there is no complaint of abdominal pain, or of any sensation of heat or burning; and when interrogated, such feelings are seldom acknowledged, unless there is a collection of undigested food, or of acrid matters. There is seldom tension of the abdomen, even when there is much sense of fulness; but this cavity is soft and can be even forcibly pressed and moved without disturbing the patient. Very generally he will affirm that he has no pain in any of the cavities of the body.

The vomiting and purging are usually without much effort or straining; the quantity of fluid evacuated is sometimes enormous; again, and even in bad cases, very trifling, and, as above intimated, in some cases, there is no evacuation by the mouth or rectum. No evidence of the secretion of bile is afforded; the partial appearance occurring during the precursory diarrhœa now entirely vanishes. So also the urine is diminished in quantity, and somtimes is suppressed, the bladder being empty. No tears are secreted. Profuse evacuations often occur from the surface of the body, especially if much heat be applied; the skin becoming more cold and livid, and the capillary circulation slower.

Should the blood be examined, it will be found darker than during the preceding or precursory state, the coagulum softer, and the serum less in quantity, and more red.

These symptoms characterize the condition of the organic life of the patient during this first stage of cholera; the organs of *animal life* are also disturbed. The nervous irritability of the patient is more marked. There is more alarm, and the senses are often exceedingly acute; noises are sometimes agonizing; the sense of thirst is always great and peculiar, often excessive; patients affirm that prior to this disease, they hardly know what was the sensation of thirst—and this too, when the tongue is moist and comparatively cold. So also the *sensibility of the skin* is excessive; patients complain of a degree of heat and of stimulation, which healthy individuals would bear without inconvenience, when the circulation in the skin is almost or altogether stagnant, when this tissue is contracted, purple, and actually colder than after death. Great complaints are almost universally made of hot applications and of sinapisms, and other rubefacients.

But this disorder of the nervous system is more especially manifested by the neuralgic pains in different portions of the body, and by violent tetanic spasms in the voluntary muscles. These spasms are most frequent in the gastrocnemii muscles; they affect the other muscles of the legs and feet, also those of the thighs, arms, back, and abdomen; occasionally those of the chest and throat, very seldom of the face. The pain is excessive—sometimes recurring at long intervals, often every few seconds, and sometimes there is apparently little intermission—the patient being agonized under a universal tetanic contraction, exciting the most heart-rending exclamations of suffering, increasing the cold perspirations, and prostrating still more the vital powers. They constitute the chief suffering of patients—indeed, the only pain to which they are ordinarily subjected.

Their occurrence is very irregular; in some cases they constitute almost the only urgent symptom, there being no vomiting or purging; while in others of a severe grade, they are very trifling, or are altogether absent. As the disease advances they often disappear, and cannot therefore be regarded as among the essential symptoms of the disease, although they evince a morbid state of the nerves.

3d. Should relief not be afforded, *the second stage, or that of collapse,* as it is significantly termed, ensues; in virulent cases it occurs almost instantaneously, there being no perceptible forming stage. The coldness of the skin now increases—becoming greater than that of surrounding objects; little warmth is perceptible even on the epigastric; the cutaneous discharge is augmented; the lividity is usually more intense, so that the whole aspect of the patient is altered as in cases of asphyxia, or as if he had been dusted with charcoal; the skin is contracted—on the hands and feet it is corrugated or shrivelled; the lips, tongue and mouth generally are also livid and cold, the thermometer in the mouth frequently not rising above 88° or 89°, and the parts *feeling* still colder to the examiner; the features are pinched and contracted; eyes sunken, with an anxious expression, the conjunctiva being pale or livid; the respiration is slow; the breath is colder than natural; the sense of oppression increases, often becomes very great, and united with præcordial distress, it produces the most unremitting and exhausting jactitation, depriving the patient of all the solace and refreshment which sleep might afford. The pulse now is at best small, tremulous, vermicular, but in most instances, disappears entirely in the smaller arteries for hours before death ensues, and sometimes in the protracted cases even for days. In the larger vessels, and in the heart itself, the pulsations are exceedingly feeble. The vomiting of serous fluids continues, and is sometimes very constant, without much nausea or retching; the purging generally diminishes, and often disappears, but sometimes a serous fluid continues to flow, pleno rivo, per rectum, without effort or consciousness on the part of the patient. No urine or bile is excreted, and the secretion of tears is suppressed.

Such is the condition of the organic life during this sinking or collapsed stage of the disease. The organs of animal life being the subject of organic life must suffer in a similar manner, but their partial independence is most wonderfully manifested. The patient's intellectual powers—his memory—perception—and even judgment, are preserved in a remarkable degree, considering the depression of his organic actions. His mind and feelings are however more quiet than during the first stage, and he seldom manifests much interest in his own safety or the welfare of others. This listlessness increases, and in some few cases partial stupor precedes death, even when there is no decided symptoms of congested brain.

The peculiar excitability of the nerves of sense and motion continues, and is in some respects often augmented, notwithstanding the increasing weakness of the circulation, the greater coldness and lividity of the surface. The sensation of thirst is agonizing—usually absorbing all the desires and interests of patients; the susceptibility of the cutaneous surface is so great, that all rubefacients, and even moderate heat, are intolerable; the patient often will not bear the covering of a blanket, and will petition with moaning accents for the removal of every means of irritation, when the pulse is no longer discernible, and life nearly extinct.

The spasms, as already intimated, often disappear, but sometimes they increase in severity, and continue almost to the last instant of life, the termination of which they seem to accelerate. Indeed, after death—that is, of the organic life, this irritability of the nerves is often manifested by the movements of the fingers, toes, and even of the limbs, continuing from a few minutes to two or three hours, and in all cases, the muscles universally become unusually contracted and rigid.

It would be foreign to the object of this paper to dwell upon the almost innumerable modifications of these symptoms which result from the various exciting causes, the temperaments, habits, constitutions, and diseases of the individuals, and the circumstances in which they are placed, or the treatment to which they have been subjected. It will be sufficient to observe, that these variations are more numerous in the first than in the second stage of the disease—among the precursory symptoms than among those which precede dissolution. In the closing scene there is a melancholy uniformity in the manifestations of this most terrible malady; the cold and livid, the moist and shrivelled surface—the shrunken features—the husky voice—the constant jactitation—the pulseless arteries—the oppressed respiration—too surely and uniformly indicate approaching dissolution, although the mind, as if determined to manifest its independence on organized matter, preserves to the last much of its wonted energies, and occasionally exhibits traits of its pristine activity.

4th. It however does not always happen, especially when medical assistance is afforded, that death terminates the second or collapsed stage of cholera maligna. In some cases *reäction* ensues; the pulse becomes perceptible at the wrist: soon a little fulness and distinctness are recognised; there is a greater warmth of the body first, then of the limbs; the effusion from the skin and bowels ceases; the lividity of the skin is less intense, and there is less jactitation: soon the warmth of the surface is decided; the corrugation of the hands and feet disappears; the colour is more natural, and all the phenomena of life are gradually reïnstated. Among these should be noticed as very favourable the return of the urinary and biliary excretions; the bile being manifested by vomiting or purging of this fluid, usually mingled with mucous matters. The tongue becomes clean and pale; the appetite is restored; the thirst disappears, and convalescence is fully and rapidly established. This is the most favourable, but unfortunately, not the usual form of reäction, for in many cases, the patient's danger continues exceedingly great, so that a very large number perish during apparent convalescence. The symptoms now manifested are so various, that it would be tedious and useless to enter into a detail, but for establishing suitable practical indications, those which I have witnessed may be arranged under three general divisions.

In many, during the reäction of the organic life, as above described, high excitement of the cerebro-spinal system is manifested. The patient becomes really maniacal, being impetuous in his actions; refusing all advice; wandering about his room or the house, and quarrelling with his attendants by day and night, until he is exhausted by his efforts; all relief from sleep being denied him. He suffers as patients maniacal from drink. Such cases are often observed in the intemperate, and those of a nervous temperament.

Another form in which reäction occurs in a dangerous manner, is where some organs are oppressed, and even overwhelmed by the severity of the organic actions. Such cases were common; symptoms of passive and active congestion being combined; the pulse often remaining weak; the extremities even cold; the bowels torpid, but the surface being generally warm, especially over the affected organ, and the natural colour being partially or completely restored. The brain suffered most frequently, but occasionally the lungs, stomach, bowels, or liver were the seats of this reäction and congestion, by which their functions were impaired, the reëstablishment of healthy action in other organs prevented, and thus the life of the patient jeopardized or destroyed.

A third variety of morbid reäction was observed, accompanied with febrile symptoms; hot, dry skin; frequent, but weak pulse; dry tongue, where no organ suffered so intensely as in the former cases from congestion, but where reäction was nevertheless inordinate, with symptoms of irritation in one or more of the viscera. The patients suffered as in typhoid fever.

5th. The last source of facts, from which the pathology of cholera maligna must be deduced, arises from the condition of the solids and fluids, observed chiefly on *post mortem examinations.*

Much has been said and written on the condition of the fluids in this disease, and statements have frequently been made directly opposed to each other. Much of this discrepancy has arisen from a want of careful observation, and also from the imperfection of animal chemistry. The latest and best observations have been made by M. L. R. LECANU, of Paris, who was rewarded by a gold medal of the Académie de Medicine, July 12th, 1831, and by W. B. O'SHAUGHNESSY, M. D. who made an official report to the Central Body of Health of London on the 7th of January, 1832.

1st. The blood is always altered in appearance, being both in the arteries and veins much darker than natural; it is less fluid; the coagulum is soft, and large, and black; often there is no proper coagulum, and no separation of the serum; the blood resembling "tar" in colour and consistence; the red globules, O'Shaughnessy affirms, remain unaltered, they are often diffused in the serum, not being retained by the imperfect coagulum. In the subjoined table from O'Shaughnessy, will be seen the changes effected in the serum of the blood from cholera patients, as far as ascertained by the most careful analysis. The specific gravity of the serum of healthy blood is estimated at an average at 1.28; that of cholera blood at 1.45. The proportion of serum to crassamentum in health being as 57 to 43; that of cholera blood as 43 to 57.

"The crassamentum was found normal in the proportion of its ingredients, so that the addition of a certain quantity of water would have restored it to its usual density, proportions, &c. For this reason I have not included the crassamentum in the tabular statement of the analysis."*

"The dense, clotted, tarry mixture consists of dense, though fluid albumen, fibrine in a semi-coagulated state, colouring matter and small traces of the usual saline ingredients."†

Comparative Analysis of Serum in Health, Malignant Cholera, and Bilious Diarrhœa, by Dr. O'Shaughnessy, of London.

Ingredients.	Healthy Standard of Lecanu.	Malignant Cholera.		Bilious Diarrhœa.
		Barras.	Dewar.	
Water - - - - - - -	906.00	854.00	866.80	921.00
Albumen - - - - -	78.00	133.00	124.00	61.85
Urea - - - - - - - -	0.00	1.40	0.00	0.00
Organic, soluble in alcohol and water	1.69	4.80	4.00	5.20
Albumen combined with soda	2.20			
Fatty matter				
Crystalline - - - -	1.20	1.40	1.23	1.90
Oily - - - - - - -	1.00			
Muriat soda - -	6.00	4.00	2.17	5.00
potassa				
Carbonate soda - -	2.10	0.00	0.5	2.30
Phosphate do. - -				
Sulphate do.				
Carbonate lime -	0.91	1.60	0.70	1.10
magnesia				
Phosphate lime				
magnesia				
iron				
Loss - - - - - - - -	1.00	0.60	1.5	0.90
Total - -	1000.00	1000.00	1000.00	1000.00

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* O'Shaughnessy, p. 35.

† Ibid. p. 62.

The result of the experiments is, that the water and the salts of the blood are diminished in cholera maligna, and the albumen is apparently increased; the serum was devoid of the least action on litmus or turmeric papers, not therefore being acid as was supposed. The consistency of the whole mass was greater from the deficiency of the serous portion, but the crassamentum was chemically unaltered.

2d. The evacuations from the skin, although profuse, have not, I believe, been collected and analyzed; they apparently consist of serous fluid only. The discharges from the bowels and the stomach are so peculiar, as to be remarked as pathognomonic signs. They are usually very abundant, and vary somewhat in appearance during the progress of the complaint. No traces of bilious matter, and rarely any of fæces can be detected; sometimes the first discharges per rectum have a feculent smell; they are always of a light colour, as in cases of jaundice, being compared to that of oat-meal gruel or rice water; at first consisting of two portions, separating when at rest; one is a serous fluid, the other consists of light flocculi, being apparently an altered mucus. In the collapsed stage of the complaint, very frequently the serous portion is alone perceived; in one case I have noticed it precisely as pure as the serum of the blood. On chemical analysis, Dr. O'Shaughnessy found that the liquid portion consists of water, mucus, albumen in small quantity, and muriate, acetate, and carbonate of soda. The flaky matter in the case of DEWAR, he is disposed to believe, was principally composed of fibrine, but "all practical chemists," he adds, "are aware of the extreme difficulty of distinguishing this substance, in a solid state, from coagulated albumen." Neither the blood, nor serum, nor evacuations were acid; the latter gave decided proofs of being alkaline.

These facts, collected during the prevalence of the epidemic at Newcastle on the Tyne, England, are confirmed by the analyses made by MM. ROSE and WITTFLOCK, at Berlin, Prussia, and by subsequent analysis made by Dr. O'S. at London. The dejections at Berlin were strongly alkaline and contained albumen. "In the case of Dewar, they contained the most remarkable of the principles deficient in his blood."* A glance at the table will show, that similar alterations in the blood did not occur in bilious diarrhœa, and "in all cases of ordinary diarrhœa, the blood preserved its normal proportions. Of more than one hundred cases of ordinary diarrhœa, the *dejections presented no single property of cholera evacuation.*"**** "I am entitled to conclude," says Dr. O'Shaughnessy, after alluding to his experiments, "that the *exudation* of the colourless parts of the blood constitutes one of the chief diagnostic characters of the malignant cholera."*

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* O'Shaughnessy, p. 66.

Respecting the condition of the organs and tissues post mortem in cholera maligna, little need be said, for it is manifest that a disease so rapid in its progress, will leave few or no alterations of structure, and the distribution of fluids during life will be but imperfectly manifested by the appearances which remain after death.

The skin remains more or less livid, but for several hours is warmer than before death; the voluntary muscles are rigid, and of a darker red; the arteries of the extremities are very small, and often contain soft, imperfect coagula, so also the veins.

The brain and spinal marrow are unaltered; the veins of the pia mater are usually preternaturally loaded, and there is some serous deposition under the arachnoid, and sometimes in the ventricles; there is also some turgescence of the vessels of the spinal marrow.

The lungs are remarkably healthy, especially as to colour and texture; sometimes they are emphysematous; the mucous membrane of the bronchi is of a dark-red colour generally, but the large vessels of these organs are not distended.

The heart is not enlarged; the right side contains portions of the dark, soft coagula, with some fluid blood; the left side is generally empty, or nearly so; there are sometimes slight serous depositions in the pericardium.

In the abdomen, the peritoneum is often preternaturally dry and adhesive; the liver unaltered, its vessels not usually distended; no bile in the pori biliarii, or ducts of the liver.

The gall-bladder usually contains bile, of a dark-green colour.

The stomach, small and large intestines, manifest a dark-red appearance on opening the abdominal cavity, which evidently depends on an injection of the blood-vessels under the peritoneum, as can be clearly demonstrated by dissection.

The mucous membrane of the alimentary canal varies much at the different stages of the disease: if death had occurred speedily before much or any serous effusion, it is often of a deep-red colour, (brick-red,) and sometimes there is a reddish-coloured fluid, or actual blood effused in the tube.

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* O'Shaughnessy, p. 72.

The mucous membrane, especially of the lower portion of the ilium and of the cœcum, has sometimes been found excessively loaded with blood of a dark, tar-like colour; the vessels being gorged with this fluid, effusions having sometimes occurred into the substance of the tissues, as in ecchymosis.

If serous and other depositions have ensued, the membrane is often pallid and coated, especially in the large and small intestines, with a whitish, cream-coloured substance or altered mucus; when this was removed, the membrane was often very pallid, but usually some redness was still perceptible.

In most instances, some portions of the membrane are found injected, occasionally in stellated spots; sometimes in patches or ridges, especially where any undigested food or fæces remained in contact with the membrane.

The mucous follicles are found patulous, and the glands of Peyer and Brunner are often enlarged.

If the patients died during reäction, more redness, in lines and spots, and occasionally recent alterations, especially of the glands of Brunner and Peyer, were detected.

The spleen and pancreas were seldom altered.

The kidneys were natural in appearance; a little of the creamy mucus could often be expressed from their tubuli uriniferi, pelves, &c.; the bladder was generally firmly contracted; urine, when present, was of a natural colour and appearance.

Such are the leading facts connected with the post mortem examinations in cholera maligna; few of them can be regarded as constant, or as necessary consequences of this complaint. Those which are the most frequent are the rigidity of the muscles, the lividity and congestion of the skin and of the mucous membranes generally, particularly of the stomach and bowels, and slight congestion of the vessels of the pia mater, connected with the gruel-like contents of the alimentary canal, and a slight enlargement of the mucous follicles and glands. There is very universally no evidence of biliary or urinary secretion. All other changes observed were but occasional, and may therefore be deemed casual. In a female, for example, who died in about eight hours from the attack, ulcers secreting pus were found in large numbers in the small and large intestines, and about two ounces of pus in the cavity of the uterus, the walls of which were much thinned. This patient had been for years an invalid, and a pensioner on the public charities. In another body, dead in six hours from apparently perfect health, red circumscribed spots, sometimes ulcerated and even gangrenous, and always covered with purulent matters, were detected. The exciting cause of the disease in this case was eating large quantities of green apples. The consequences therefore of prior disease of the stomach, bowels, and other organs, and the effects of occasional accidental causes must be carefully distinguished from those which necessarily result in cholera maligna.

Having thus rapidly surveyed the characteristics of cholera maligna during life and after death, we must endeavour to ascertain its *pathology*, that is, the actual condition of the general system, and of particular organs and tissues, considered as regards, first, their organic life, and second, their animal life.

First, we are to inquire into the condition of the organic life of the cholera patient. If the second or collapsed stage be regarded as the true type of the complaint, the evidence of sedation, or diminution of action in the general system, is undeniable. The cold and livid surface, the tearless eye, the pallid and cold tongue, the coldness of the breath, the weak, fluttering, almost imperceptible pulse, leave no mind in doubt respecting the prostration of vital excitement in all, or nearly all the organic tissues.

It is however contended that this sedation of the general system, and of most of the organs, is a secondary and not a primary condition—resulting not directly from the original epidemic cause, but indirectly from the occurrence of severe local irritation or inflammation—that vital excitement is so concentrated in a particular tissue, the gastro-intestinal mucous membrane, that torpor or prostration of the other tissues ensues. That this sedation is however the direct and immediate consequence of the epidemic influence, is, I think, fully proved by an examination of the symptoms preceding and accompanying the primary stage of the disease. There is no evidence at any time of vascular excitement, no frequency or irritation of the pulse, no dryness or heat of the skin, tongue, or any other accessible tissue. On the contrary, in many instances, long before there is any decided manifestation of the disease, at least to the inexperienced or unobserving, and of course prior to any evacuations, the skin will be found pallid, and of a darker tinge than natural, with a loss of elasticity, the features contracted, the tongue pallid, the appetite impaired, the urine diminished in quantity, and the stools of a light colour, indicating the deficiency of the biliary secretion. These are among the incipient symptoms, and, if careful observation be continued, it will be seen that these symptoms become more decided as the complaint advances; all of them characteristic of sedation—there being no evidence whatever of at least general excitation of the circulation at any period of the disease, whether of a mild or severe type. This sedation of the general system of organic life is confirmed not only by the bronze-like or livid condition of the external tissues, but by the appearance of the blood in cholera, being, as already intimated, directly the reverse of that manifested in inflammatory diseases. A more striking contrast can hardly be presented than is exhibited between the black, tar-like blood of cholera, with its soft, imperfect coagulum and deficient serum, and the sizy-cupped blood of inflammation, with its scarlet-coloured and dense coagulum, and its abundant and pure serum. This change in the blood was not confined to the blue or collapsed stage as has been asserted, but although then most decided, yet could be noticed among the earliest of the premonitory symptoms more or less distinctly. Blood, whenever drawn from the arm of a patient under the epidemic influence, was darker than on ordinary occasions, and the coagulum which resulted was less firm. This remark has been made not only by myself and other physicians, but by some of the bleeders in this city during the late epidemic, showing that the cause of the change, whatever might be its nature, had an early influence.

The above views are, it is believed, confirmed by examination of particular tissues or organs; for in simple, uncomplicated cases of cholera, there are no indications of local irritation, but those of sedation were generally observed.

The condition of the cutaneous tissue in the incipient, as well as in the confirmed cases, has already been noticed; in all, the cold, inelastic, pallid or livid condition of the surface was early and continuously observed; a state directly opposed to the tense, florid, elastic, and heated condition of this tissue in irritative diseases. The same observation was strictly true of the lips, tongue—indeed of the whole mouth and fauces; the thermometer even indicated a loss of vital temperature, sometimes to 10 or 12 degrees.

The internal surfaces, there are strong reasons to believe, were in a similar condition. There was a deficiency of secretion from the lachrymal gland, without any symptom of irritation. There was no evidence of inflammation in the membranes or substance of the brain or spinal marrow, and none has been contended for. The lungs were so far implicated in the affection, that there was frequently a difficult and oppressed respiration, often with a sense of stricture and uneasiness; and post mortem, the mucous membrane was very universally found preternaturally red, or even livid. That these phenomena did not however depend on irritation or inflammation, seems to be generally conceded—inasmuch as there was no cough, or pain, or other symptom of active disease, and no expectoration; the expired air was colder than natural, affording a very positive index of the vital heat of the whole mucous membrane; and post mortem, no lymph, or pus, or ulceration, or other products of inflammation were observable, but the structure of the lungs was remarkably perfect.

In the abdomen, we infer there was sedation of the liver from the early deficiency of bile during the premonitory symptoms, and from its entire suppression in all cases after the disease was fully formed, while no symptom of hepatitis was manifested during life, and none of its consequences after death. So also, as respects the kidneys, there was a diminution or suppression of their secretion in all cases, and after death they were found in a normal condition. Respecting the secretion of the pancreas, whether increased or diminished, we of course have no evidence, but this organ and the spleen underwent no perceptible change in cholera. Few pathologists will deny the correctness of the inference, that the organs and tissues above alluded to, are in a state of sedation, varying in degree in the different stages of cholera maligna; but great discrepancy of opinion still exists as to the pathological condition of the stomach and bowels during the progress of the disease. The question is no doubt a difficult one, arising as well from our ignorance of the true nature of their physiological actions, as from the apparently contradictory facts accumulated on this subject.

I have no hesitation however in expressing the opinion, founded on an attentive examination and consideration of these facts, that there is a sedation of organic life in the alimentary canal; especially that there is a diminution of capillary excitement throughout the whole extent of the mucous membrane, from the mouth to the rectum, in all cases of a simple, uncomplicated character. The facts and arguments in support of this opinion, I shall presently adduce more at length, but it may be now stated, that the usual and acknowledged symptoms of gastritis are not commonly observed, such as sensations of heat and burning; pain aggravated by pressure; fulness and tension of the abdomen: there are no sympathetic irritations; the liver remains torpid; the tongue, instead of being warm, red, and pointed, with elevated papillæ, is cold, livid, and flaccid; there are no burning sensations in the throat, and no excitement in heart, arteries, or capillaries: the evacuations differ in appearance, and chemically* from those which occur in cases of gastro-enteritic inflammation; there are no lymphatic or membranous effusions, no purulent secretions, and even the mucoid depositions have an appearance entirely dissimilar from those observed during inflammatory diseases of these tissues.

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* Vide statement above respecting the fluids in cholera.

Respecting the post mortem appearances, I shall endeavour to show, that they differ from those resulting from active irritation, and that the opinion now advanced, is not only perfectly consistent with the existence of intense thirst, with the vomiting and purging of serous fluids, and great congestion of the mucous membrane, but is even confirmed by some of these phenomena.

The dry condition of the peritoneum, so generally observed post mortem, without any indications of inflammation, show that the capillaries of this extensive serous membrane were also in a torpid condition—a state, it may be remarked, which does not exist in cases of gastro-enteritic inflammation, however acute or extensive.

From this review of appearances during life and after death, we infer that there is a sedation of the organic actions in the incipient, as well as confirmed cases of cholera, on internal as well as external surfaces, of the large blood-vessels and the heart, as well as of the capillaries.

It is of practical importance to remark, that this sedation is first manifested in the capillary tissue, afterwards in the larger vessels and the heart—as we notice, the pale, livid, inelastic condition of the skin, the contraction of the features, the livid and cold tongue, the diminution of the urinary and biliary fluids, while the pulse, although free from irritation, is full, often strong and laboured. In a short time the pulse becomes weak, small, fluttering, imperceptible, and the actions of the heart weaker until they cease in death.

This being the condition of the circulatory vessels, alterations must occur in the distribution and in the quality of the blood.

1. The distribution of the fluids is disturbed. The blood, which in health circulates rapidly in the capillary vessels, constituting, no doubt, a large proportion of the circulating mass, and affording materials for secretion and nutrition, is no longer actively determined to these remote vessels. Little blood evidently enters these capillaries; and when introduced, moves very tardily, and, in bad cases, is absolutely stagnant. This is shown, not only by the lividity and coldness of the surface, but by the effect of pressure, which empties the vessels with difficulty, while the part pressed long remains pallid and sunken. The experiment may be satisfactorily made on the mucous membrane of the mouth as readily as on the skin. The blood thus excluded from the capillaries must be thrown upon the larger arteries and veins, especially of the viscera, causing congestion of the organs. That such congestion actually occurs, is manifested by

the fulness and slowness of the pulse in the early stages—by a sense of fulness about the head, chest, and abdomen—by the oppression about the heart, lungs, and præcordia, often with a sense of stricture or weight—by the great and immediate relief afforded by venesection, and by the turgescence remaining after death in the mucous membranes of the stomach and bowels—in the veins of the brain and spinal marrow.

As the sedation extends to the large vessels of the extremities, the blood is here also imperfectly circulated, and the evidences of visceral congestion are more decided, notwithstanding the immense effusion of serous fluids.

2. The blood is altered in quality, as has frequently been mentioned. How this alteration is effected is not known, but it is generally acknowledged that the purity of the circulating fluid in health is preserved mainly by the respiratory process, and by the secretions from the liver and kidneys; and that these processes in the lungs, liver and kidneys are effected, in some way, through the instrumentality of the capillary vessels. The normal excitement of these vessels being diminished, it necessarily results that these vital processes are inadequately executed; the blood therefore is not completely purified; the elements of the urine and the bile are not eliminated by their natural emunctories,* and hematosis is imperfectly executed. The quality of the blood must therefore be altered, and its colour must manifest the venous rather than the arterial hue, as observation has clearly demonstrated. It may be also remarked, that if these observations be correct, the early change noticed in the blood is indicative that the sedation of the capillary vessels of the mucous membrane of the bronchi is among the primary symptoms of cholera, contemporaneous with the torpor of the skin, liver, &c. and prior to any increased evacuations from any of the tissues.

Connected with these changes in the quality of the blood, should be noticed the change in its consistency. Its viscid condition is supposed to be dependent on the loss of serous fluids, and is considered by many as an important circumstance in inducing and keeping up the stage of collapse even to a fatal termination. That some influence may be thus exerted is probable, but that it has been much exaggerated, is proved by the fact that patients have occasionally recovered from very low stages of collapse; their blood not being too viscid for the sustenance of life, when there is a suitable reäction of the capillary system. It may be mentioned also, that such recoveries show that the blood in collapse is still capable of being changed in the lungs when reäction of the capillary system ensues, notwithstanding the loss of serum; a fact confirmed by the experiments of O'Shaughnessy, who affirms, p. 41, that its capability of aëration is shown to be preserved.

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* Vide table, where it will be seen that *urea* was detected in the serum of cholera blood.

From the analysis now presented of the symptoms of cholera, and of the post mortem appearances, it results that there is a primary sedation, (diminution of excitement,) in all the organic actions, followed as a necessary consequence by a passive congestion of an impure blood. It should be added, that this congestion of the internal organs oppresses them, and of course aggravates the symptoms of sedation. The natural disposition to reäction is thus still further resisted, being repressed not only by the influence of the original poison, but by the quantity and quality, perhaps also, by the viscidity of the blood congested in the vital viscera.

That these conclusions to which I have been brought by clinical observations, without any, the least bias from any preconceived opinions, may appear more plausible to others, it becomes requisite to examine some of the facts and arguments adduced to prove that the gastro-intestinal mucous membrane forms an exception to the idea of universal sedation, that this tissue is in a state of high organic irritation, and that all the phenomena of cholera maligna depend on this inflammatory condition of the stomach and bowels; the vital powers and actions being prostrated by the extent and severity of the inflammation, and by the free evacuations. The operation and effects of a severe emetico-cathartic medicine have been adduced as exemplifying and illustrating the state of the mucous membrane and the general system in cholera.

To me, the whole of this opinion is evidently inconsistent with the experience of its own advocates; for they all maintain, that prior to actual collapse, however severe the spasms, or profuse the discharges, cholera can be very easily managed—that by slight remedial measures, such as immersion of the feet in a warm bath, warm fomentations, and some camphor and laudanum, all the phenomena of the disease vanish, and few, if any, need perish during the first stage of the complaint. Certainly these observations cannot be predicated of severe and extensive cases of gastro-enteritic inflammation. It is remarkable that this inconsistency attaches chiefly to the Broussais school, who have so inordinately magnified the effects and dangers of gastro-enteritis.

If there be this inflammatory irritation of the mucous membrane, mild cases of cholera, (very many of which occurred,) would, according to received opinions respecting inflammatory diseases, be attended with febrile irritation—the sympathies of the body were not destroyed, as the system readily reäcted in such cases under mild stimuli; but no such sympathetic irritation appeared.

Respecting the analogy between cholera maligna and that prostrated state of the system brought on by a corrosive poison, or an irritating cathartic, the appeal may safely be made to clinical experience to exhibit, even to the unprofessional observer, the most marked discrepancies. In both, it is true, the system is prostrated, but in the latter cases we shall look in vain for the suppression of the biliary secretion, the cold and livid tongue, the livid surface, and all the characteristic physiognomy of prostration from the poison of cholera.

It is said, that cholera maligna must be inflammatory, as the exciting causes are all of them irritants: but this assertion is not universally correct. Perhaps the most frequent exciting cause was change of temperature from warmth to cold. The attacks frequently came on at night from exposure to the weather, sleeping in a draught of air, throwing off the bed-clothes, jumping suddenly out of bed upon a cold floor or mat: spasms, vomiting and purging, were thus frequently excited by the sedative influence of cold acting on a system predisposed to cholera. Hence the almost universal prophylactic direction was to keep the body warm, and to avoid exposure to cold during the epidemic; and perhaps no direction was more beneficial, and no single circumstance more conduced to the preservation of those in comfortable circumstances; while the poor and vicious, who were more exposed and more negligent, suffered severely. In the Philadelphia Alms-house, it was found that the number of cases among the maniacs and idiots was proportionably much greater, and of a more severe type, arising no doubt from their neglect of clothing, especially at night. In all these cases, the sudden diminution of the cutaneous circulation and secretions, and the consequent internal congestion, was the immediate or exciting cause.

But irritants are also exciting causes; of these, food from its quality or quantity is among the most frequent. On the supposition, that sedation exists as the immediate effect of the epidemic influence, the digestive powers of the stomach are enfeebled, and hence, as experience of almost every one can testify, even the ordinary and useful articles of diet were not readily digested. Should, therefore, food prove indigestible from its quantity or quality, the common symptoms of indigestion were excited, characterised by a great sensation of oppression and load at the epigastric, with restlessness and jactitation;

cold, pallid surface; weak pulse, &c. In other words, the powers of the stomach and system were oppressed, even by comparatively slight errors of diet, owing to the peculiar predisposition of the system, and this oppression was often maintained by the same cause, even to a fatal termination. That the symptoms in these cases were not usually dependent on inflammation, is shown by the immediate relief often induced by vomiting—the cause being removed, the effect disappears. That inflammation was sometimes excited by acrid ingesta, no one would deny, but such inflammation is not essential, and however it might aggravate the symptoms, must be regarded merely as a complication to be presently noticed.

Respecting laxatives, my own experience does not confirm the assertion, so frequently made of their injurious effects. I often, indeed continually, prescribed them during the premonitory symptoms, and never knew them to act otherwise than beneficially. That hydragogue, irritating cathartics would be injurious, inducing prostration, there can be no doubt, on principles already advocated, without any support to the doctrine of inflammation.

Another argument adduced in favour of the gastric pathology, is drawn from the liability of the intemperate to cholera, because they are always the subject of chronic gastro-enteritis. Their liability, however, should rather be referred to the exhausted condition of their vital powers generally, and to their proneness to congestive diseases. Hence the depressing influence of the epidemic is sooner experienced, and congestion with its consequences more easily induced.

As to the sensations of heat about the epigastric, the burning and griping pain of the stomach and bowels, the violent tormina or tenesmus, or spasms of the alimentary canal, I have no idea that they ever occur as the ordinary symptoms of cholera; if present, they depend on some accidental complication. I have never in India, or in this city, witnessed tenesmus or spasms of the bowels in a well-marked case of cholera maligna; the spasms are located, not in the bowels, but in the abdominal muscles, and should tenesmus and other dysenteric irritations exist at the access of cholera, they have always in my practice disappeared until the symptoms of cholera were relieved. Ordinarily patients complain only of the cramps of the voluntary muscles; the abdomen is free from tension, and can be pressed upon without any pain or tenderness being excited.

The distressing thirst which characterizes cholera, is dwelt upon as a strong argument in favour of inflammation, but it exists in congestive as well as inflammatory diseases; is as troublesome during the cold as the hot stage of fever. It is accompanied, not by a dry, red, clammy, and heated state of the tongue, mouth and fauces, but with a soft, moist, cold, and livid condition of these tissues. It increases with the symptoms of collapse, and decreases as signs of excitement appear. Its progress also is *pari passu* with the great susceptibility of the skin to external stimuli, commencing and increasing, or declining together. Hence as all acknowledge, that the surface of the body is not inflamed in cholera, but that its susceptibility to impressions depends on a morbid condition of the nerves of sensation, we have a right to conclude that the thirst in cholera is the result, not of a sanguine irritation, but of a peculiar affection of the nerves. It is a *morbid sensation.*

Again, it is asserted with much confidence, that there must be inflammation, because there is vomiting and purging of sero-mucoid fluids in immense quantities.

That the mere act of vomiting is a proof of sanguine irritation, few perhaps will contend, who reflect that the loss of blood will create nausea and vomiting, even in healthy individuals.

Respecting the profuse evacuations so generally observed in cholera, the question is of importance, and returns at every view of the subject. Do they demonstrate an excited or irritated condition of the exhalants in opposition to the arguments which have been adduced, or may they not be simply effused, poured out from the overloaded tissues, in the same way that blood is effused in passive hæmorrhages? That passive congestions are usually followed by effusion of serous fluids, and that immense evacuations may occur from tissues free from inflammation, and even in a prostrated condition, the following undeniable facts clearly demonstrate.

1st. A profuse serous discharge occurs from the skin of cholera patients, is noticed in the colliquative sweats of hectic fever, and in the cold perspirations which so constantly indicate the approach of death, or which cover the pallid surface of one prostrated under severe pain however inflicted. In none of these cases, will any one suppose that there is an inflammation, or even irritation of the cutaneous tissue, marked as it is by pallor or lividity, by coldness and contraction, and every other sign which can indicate diminution of excitement and death-like prostration.

2d. A similar sero-mucoid fluid is often observed from the conjunctiva of the eyes, in states of great prostration. This is often accompanied by a sudden engorgement of the vessels of the conjunctiva, at a moment when all action is disappearing in every tissue of the body. It is the stasis of blood, and a consequent effusion of its thinner portions, immediately preceding its universal arrest in death.

3d. Mechanical interruptions to the venous circulation, causing an engorgement of the small veins, will be followed by an evacuation of the thinner portions of the blood, without any evidence of irritation and inflammation. Hence a tourniquet, or ligature, or bandage, moderately tightened on a limb, will cause œdema of the hand or foot. Hence the œdema of the lower extremities in pregnant females, and in patients with varicose or diseased veins, &c.*

4th. The influence of cold suddenly applied, when the circulation is active, renders the part livid and anasarcous, without any indication of inflammatory excitement.

Many similar facts might be presented, very positively demonstrating that no argument can be drawn in favour of inflammation from the evacuations in cholera. On the contrary, when it is remembered that these evacuations differ in their appearance, and on chemical analysis, from the fluids evacuated in acknowledged gastro-enteritic irritations; that they contain, in some instances at least, the principles deficient in the blood;† that the natural secretions diminish or disappear on their occurrence, and return when they are arrested; that the muco-purulent secretions of dysentery are also incompatible with their existence, disappearing on their occurrence, and often returning when they cease; that no relief is afforded by these discharges, the circulation becoming weaker and slower, and the lividity and prostration increased, the conclusion seems unavoidable that they are passively effused, and not actively secreted. They constitute a serous hæmorrhage. Hence we may also conclude, that the condition of the skin, cæteris paribus, making allowance for difference of organization, is a prototype of the mucous membrane of the alimentary canal; in both there is congestion and lividity from dark blood; while a clammy serous evacuation occurs on the surface, a sero-mucoid effusion is poured from the intestines. It is believed that the results of treatment confirm these inferences as will be shown hereafter.

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* "When the mechanical hyperæmia is carried to a certain extent, other phenomena may arise as a consequence. Thus the serous portion of the blood may escape from the over-distended vessels, just as water or any other liquid transudes through the permeable sides of a vessel in which it suffers compression." *** "And although these effusions have nothing active in their nature, yet are they considerably diminished, and sometimes altogether removed by blood-letting."—*Andral, Pathological Anatomy, Chapter on Hyperæmia.*

† Vide analysis of the fluids.

Finally, much dependence is placed on the post mortem appearances, as proving the existence of inflammation. The redness often observed we have endeavoured to show is the result of passive, not active congestion; it was, in uncomplicated cases, greatest when patients died early, and was lessened by the effusions; in this respect differing from active congestion, the remains of which are not observable if patients die speedily. The sub-peritoneal tissue of the intestines was remarkably loaded with blood in almost every case of dissection, even when the mucous membrane was pallid—this is peculiar to passive collections; and the colour was always darker than ordinary. There were none of the usual alterations of tissue observed from irritation; no thickening and no softening; strips from the mucous membrane being as long and as firm as on ordinary occasions, according to the report of Dr. Pennock. The difference existing between the sero-mucoid fluids of cholera, and the lymphatic and purulent formations of inflammation have already been noticed.

The enlargements of the mucous follicles, and of the glands of Peyer and Brunner would seem to indicate inflammation, but such enlargements were not universal,* (hence cholera could exist and be fatal without them;) they were seldom very great; they are frequently observed in other diseases, and allowing them to be inflammatory, were therefore altogether inadequate to account for the peculiar symptoms and fatality of the epidemic.

While thus contending that a universal sedation is the primary and essential pathological character of cholera maligna, it is not denied that complications with inflammatory diseases may frequently occur; indeed they are not uncommon, and have no doubt retarded our progress in the study of cholera, by fixing attention on points of secondary importance, while the great leading and original phenomena have been neglected. But this complication is regarded as impossible; how can irritation and sedation coëxist? Of course, they cannot at the same spot, at the same time; but when any portion of a tissue is inflamed prior to the accession of cholera, this inflammation although diminished by the sedative influence of the epidemic cause, may nevertheless continue while the rest of the tissue is torpid and passively congested; again, after sedation in any tissue has occurred, particular portions may become inflamed from any acrid irritant. To exemplify these principles,—an individual otherwise in health, has ulcers on the surface of the body, and afterwards becomes the subject of cholera; the ulcers may continue moderately inflamed, and may even secrete purulent matter while the whole cutaneous tissue is cold, livid and torpid:—in another case, after cholera has ensued in an individual previously in a normal condition, severe irritations from wounds, mustard, cantharides, &c. may be excited on the skin, which in every other portion, continues to manifest symptoms of diminished excitement. On these principles, most of the complications from inflammation and ulceration of the mucous membrane may be explained. Thousands, no doubt, of patients with chronic gastro-enteritic diseases, have been the victims of cholera epidemica, and of course, post mortem, the consequences of inflammation will be found conjoined with those peculiar to sedation and passive congestion. This was universally the case with the intemperate, who so remarkably suffered from the epidemic. So also, if no prior inflammation existed, irritation with all its consequences, was frequently excited by improper food, by acrid medicines, &c. in particular portions of the stomach or bowels. These cases afford examples of passive and active congestion, in the same tissue; in the same manner that this combination was exhibited by a blister on the skin in cholera.

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* In thirty-six examinations made in Paris by M. Louis and Andral, reported by Drs. Pennock and Gerhard, "the glands of Brunner were developed in a notable manner in rather more than two-thirds of the cases; those of Peyer were more visible than usual in a rather less proportion but rarely projected above their ordinary level." p. 76.

Another and third source of inflammation arises from the changes occurring during the stage of reäction; then, when the secretions are returning, and the pulse and skin even excited, inflammation is developed in various organs, and is productive of its usual consequences.

There may be other sources of irritation of the mucous membrane, but the evidence deducible from the symptoms and from dissection, shows that, in all cases, such inflammatory affections are trifling, compared to the intensity of the disease; that the symptoms indicating the state of the general system and of particular organs, are essentially different from those ever produced by gastro-enteritis, however acute; and finally, that the most intense cases have often terminated fatally without any indication of inflammation before or after death.

Second.—What is the condition of the organs of animal life,—the brain, spinal marrow, and nerves of sensation and motion?

In the introductory remarks, the relative influence exerted by the organs of the two lives on each other was alluded to, and especially the fact that, as the cerebro-spinal system for its development and support is entirely dependent on the organic actions, it must be to a certain extent affected by the diseases of organic life. In cholera maligna I have already detailed the changes in this system, so far as its circulation is concerned, maintaining that it was the subject of sedation and congestion of its capillary and larger vessels, there being no evidence of inflammation or its consequences before or after death.

Notwithstanding this depression of organic actions, there is abundant evidence of *a morbid irritability of the brain and nerves.*

The irritability of this system is manifested by the wild and anxious expression of countenance at the commencement of the attack, by the activity of the intellectual powers in the first stage of the disease—an activity which, though afterwards much diminished, is comparatively great, even in extreme collapse, and sometimes to the last moments of existence. There is often great intolerance of sound, the least noise disturbing or agitating the patient; indeed, all the senses are remarkably acute. The sensibility of the skin is excessive; even when this tissue is perfectly livid and cold, and the circulation seems to be completely arrested, the common warm and stimulating applications are intolerable. The patient begs that they may be removed, and should inflammation be excited, the complaints are often distressing. Experience has shown that great heat, alcoholic and other vapours, sinapisms, cantharides, &c. are often productive of great mischief, in consequence of the extreme susceptibility of the cutaneous nerves, increasing the restlessness and distress of the patient, augmenting the serous effusions, the lividity and coldness of the skin, and prostrating much more rapidly the organic actions.

The same nervous sensibility is manifested by the intense thirst by which patients are usually tormented, and which we have endeavoured to show, is independent on irritation or inflammation.

The evidences of nervous excitement are most decidedly exhibited in the spinal nerves. Even during the premonitory symptoms, and often when no other evidence exists of the epidemic influence, the patients complain of neuralgic pains and of slight spasms of the voluntary muscles. These spasms increase, and often become agonizing in the extreme, during the first stage of cholera, and they sometimes continue during the stage of collapse, even until the close of life, augmenting the jactitation of the patient, the exhausting sweats, and all the symptoms of prostration; in some cases appearing to be the immediate cause of death. Even after death, that is, after the cessation of organic life, animal life is manifested, as already intimated in the contraction of the muscles, producing even motion in the otherwise lifeless members.

During the stage of reäction, the same irritability of the nerves is often witnessed in the watchfulness and sleeplessness of patients;

their susceptibility to noise, and disposition to nervous delirium or mania, which are often so excessive as to exhaust the organic powers, and thus destroy the well-founded expectations of recovery.

In these indications of nervous irritability, there was great variety in different patients, depending on various causes, as original temperament; habits of living; prior diseases; strength, &c. &c. but especially on the condition of the circulation in the brain and nerves. Sometimes there were few spasms, or other evidence of irritability, owing to great congestion of the brain; the patient becoming dull, stupid, and comatose. In a majority of instances, the presence of the spasms seemed to be dependent on a certain degree of congestion, acting as an exciting cause, inasmuch as they were relieved by the loss of blood, or by revulsives increasing the cutaneous circulation. There were many fatal cases, without any suffering from spasms, and in cases, otherwise mild, the rigidity of the muscles and the intensity of the suffering were excessive.

In the preceding observations, we have conscientiously endeavoured to analyze the phenomena of cholera maligna, separating the accidental from the essential and characteristic symptoms of this dire pestilence, and from these last to deduce the actual state of the tissues and organs of the economy; in other words, the *pathology of cholera.*

The conclusion to which we have been brought is, that in cholera maligna there is *a universal sedation of the organic life*, manifested primarily in the capillary tissue, then in the larger vessels and heart, with a consequent passive congestion of an impure blood in the internal tissues, aggravating the sedation, and resisting the natural disposition to reäction; and that there is also a *peculiar and morbid irritability* of the cerebro-spinal nervous system, the apparatus of animal life.

Cholera maligna is therefore virtually a disease, not of irritation, but of sedation; not with active circulation or inflammation in any tissue, but of torpid circulation and passive congestion. Thus constituted, it is modified by temperaments, constitutions, habits, sex, age, prior diseases, strength, &c. of the patients, as other affections, and is often complicated by local irritations from the quantity or quality of the ingesta, or from improper treatment, and by the actual presence of inflammation in one or more tissues, &c. aggravating its symptoms and dangerous character.

This being assumed as the nature of the disease, the therapeutical indications are clearly and easily deduced.

1st. *Organic life is to be stimulated*, that the healthy capillary functions may be reïnstated. Thus the natural secretions will be restored; the blood be purified by the appropriate organs, the lungs, liver and kidneys, and congestions be relieved.

2d. *The irritability of the animal life is to be moderated*, that the mental agitation, the delicacy of the senses, the morbid sensibility of the skin, the excessive sensation of thirst, the neuralgic pains and the violent spasms may not be injurious.

These apparently opposite indications should be borne in mind in the treatment of every stage and variety of this complaint, and should receive suitable and proportionate attention; so that one set of functions need not be stimulated or depressed to the injury of the other; organic actions be so excited as to aggravate the nervous symptoms, nor these nervous affections be regarded as the sole object of treatment, to the neglect of the organic depression. By judicious, constant, and persevering attention to these indications, we can alone, I think, scientifically and correctly manage cholera maligna, although here, as in most other diseases, patients have recovered, and have perished under every variety of treatment, however judiciously prescribed, or empirically administered.

In detailing therefore the treatment, tested by experience, and resulting from the above pathological views, and to my mind, establishing their correctness, the different stages of the disease must be passed in review.

1st. *Treatment of the precursory symptoms.*—As formerly intimated, there is a moderate depression of excitement in all the organic actions, prior to the occurrence of decided symptoms of cholera, extending to the mucous membranes of the lungs, alimentary canal, liver and kidneys, with some nervous irritability. Hence the indications are, to restore the normal activity of the secretory vessels, and to moderate the nervous excitement. These indications may, at this period, often be fulfilled by the mildest remedies. External measures are often adequate for this purpose, such as frictions, hot pediluvium, manuluvium, warm bathing, and, as acting more constantly and permanently, confining the patient in bed, or using warm clothing, especially flannel, next to the surface; also by the application of simple or even irritating plasters to susceptible portions of the body. These measures should be assisted by the use of warm drinks. All exposure to cool air, or to a current of air, and the use of cold drinks, are very dangerous as increasing the sedation of the surface and internal congestions. Patients therefore should sleep with much warm covering, paying particular attention to their limbs, and avoiding sudden transitions of temperature, especially on rising from bed. In some cases, it may be necessary to administer mild diaphoretics, as the sweet spirits of nitre, the saline mixture, assisted, it may be, by minute doses of calomel.

But as the irritability of the nervous system usually demands attention, as well as the sedation of the capillaries, the *narcotic stimuli*, in small and repeated doses, become valuable remedies.* Of these, camphor is generally to be preferred, as being a warm diaphoretic, while it quiets nervous irritation. It has been much and deservedly celebrated. Opium, in its various preparations, is often invaluable in fulfilling the same indications, and should frequently be conjoined with the camphor, or be employed as its substitute.

Great attention to *diet* is of the utmost importance, predicated on the simple principle of sedation of the organic actions of the digestive apparatus. Hence the diet should be simple and easy of digestion; for, as already intimated, next to cold, the occurrence of indigestion was one of the most frequent exciting causes of cholera maligna.

This principle should regulate the diet of all the inhabitants where the epidemic influence is prevailing. If no disease be actually present, the diet may be, and indeed ought to be *nutritious*, and sometimes even rendered moderately stimulating by condiments to facilitate the normal excitement and secretions of the digestive fluids. Hence, meat and the farinacea, in moderate quantities, occasionally with spices, form the safest general diet for well persons during the epidemic. Some whose digestive powers are usually vigorous, might employ fresh vegetables well boiled with advantage, and even ripe fruit is often useful, from the well known influence of vegetable matters on the excretions. Great care should, however, be exercised, as even the most vigorous are depressed by the epidemic influence, and indigestion, with all its dire effects, might be the consequence.

Should any premonitory symptoms exist, solid food, of course meat, should be abandoned, and the farinaceous matters with spices be alone administered. If, however, the stomach be oppressed by indigestible food, or any acrid ingesta, a mild emetic is of great value by removing the source of depression and facilitating general reaction. On the same principle, laxatives, especially magnesia or rhubarb, or castor oil, are often highly important, particularly when the patient has been long costive. I never knew them act as exciting causes of cholera, as has been alleged, but have uniformly found them useful even when diarrhœas or slight dysenteries, ("cholerine,") have been present, but by removing sources of depression, and restoring or keeping up natural secretions, they do good. They should be accompanied or followed by the use of warm drinks, by small but repeated doses of camphor, or other narcotic stimulus, usually combined with mild diaphoretics and aromatics.[*] The precursory diarrhœa will usually disappear under the above treatment, but may occasionally demand mucilaginous or anodyne enemata, or the more decided plan presently to be indicated.

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* This class of medicines having at the same time a sedative influence on the nervous system, and a stimulating effect on the organic actions, (whence their name,) is admirably adapted to the peculiar state of the system we are considering, and would seem indeed to confirm the idea, that this combination of organic depression and animal excitement, is not uncommon.

2d. The *treatment of the first stage of cholera.*—Should the premonitory symptoms be neglected, or injudiciously managed, the sedation of the capillaries is more marked, and there is fulness or oppression of the larger vessels with the severe consequences already detailed. The remedies already recommended should now be actively exhibited, and will sometimes be adequate for the emergency by recalling the circulation to the extreme vessels and restoring the secretions, but generally direct evacuation must be employed to relieve the congestion which resists the natural disposition to reäction, and the effect of remedial measures. *Copious bleeding* from the large veins had the most beneficial tendency, not simply by unloading the vessels, but by thus indirectly facilitating reäction—manifested by more fulness and activity of the pulse, and renewed activity of the capillary circulation. The advantages were generally striking and immediate; the feelings of oppression about the head, lungs, heart, and abdomen, were at once relieved—the surface would become warmer, even the livid colour would be lessened—the vomiting and purging would diminish or disappear, while a warm perspiration be universally diffused over the surface, indicative of a similar return of the internal secretions. Even when all these good effects were not immediately displayed, the symptoms would be ameliorated, and the susceptibility of the tissues to remedial agents be aroused.

In this and similar states of the general circulation, the object and the effect of venesection is, not as in inflammatory diseases, to reduce the pulse and diminish capillary action, but by relieving congestion and oppression, thus indirectly to facilitate the development and activity of the arteries and capillary vessels. That this indication is fulfilled, is evinced not only by the increasing fulness and frequency of the pulse, and the warm perspiration, but also by the changes occurring in the blood, even during the operation; for it was observed that the blood first discharged was of a very dark colour, and in many instances flowed with difficulty, and tardily, even from a large orifice in a large vein, sometimes *guttatim*, but in a short time the momentum increased, and the colour improved, so that a full stream of almost arterialized blood would sometimes be poured forth with considerable impetus. As, in these cases, the pulse would rise from its depressed condition, becoming full and active, as the oppression was ameliorated, and as the secretions and the heat of the skin returned, large quantities of blood could often be beneficially abstracted; ℥xx. to xxx. could frequently be taken from even delicate individuals, while from the strong and plethoric I have taken ℥lx. to lxx. with great and immediate advantage, and without any reason subsequently to repent of this active depletion. The patient was usually found at a subsequent visit with a warmer skin, a fuller pulse, and more natural secretions. In cholera maligna, we bleed not to diminish excitement, but to relieve oppression.

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[*] The following formula, recommended by Dr. Parrish, I found very grateful:—℞. Sp. Lavend. co. ℥i.; Laudan. ʒi.; Sacch. alb. ʒij.; Aq. camphor. ℥iij. M. S. ʒij. or ʒiv.

After venesection, the patient might sometimes be trusted to the mild measures already indicated, to mild *diaphoretic anodynes*, with warm and moist applications to the surface. But if the disease be severe, more active measures are demanded to excite and keep up the secretions, as large doses of camphor and ammonia, in the form of powders, or of mixture, Dover's powder, assisted by warm drinks, such as wine whey, or warm aromatic infusions, &c. Stimulating frictions to the extremities, with spirit of ammonia, spirit of turpentine, Cayenne pepper, &c. the application of sinapisms and other rubefacients, and sometimes of blisters, were very advantageous in quickening and keeping up the cutaneous circulation—as also of dry heat, by means of bottles of hot water, hot bricks, sand, oats, &c. where the sensations of the patient would tolerate these measures.

To fulfil, however, the all-important indication of reëxciting the capillary actions, no medicine was comparable to calomel. Other remedies were useful in accomplishing this object, but however rapid in their action, their effects were often trifling and transitory, compared to the decided and permanent influence exerted by the mercurial preparations. Calomel was usually preferred, and was given in doses of gr. ij. or iij. alone, or in combination with diaphoretics, every hour, or every two or three hours, until some twenty or thirty grains were administered, or until the symptoms were relieved.

Operating slowly, but very certainly, upon the extreme vessels, augmenting their circulatory and secretory actions, it admirably fulfilled the indication presented in cholera, and was therefore the main dependence of the practitioner. Thus, by obviating the sedation of the exterior vessels by direct and indirect means, by suitable stimuli and by venesection, congestion and consequently effusion are obviated. The skin now secretes a natural perspiration, and the biliary and mucous secretions are substituted for the effusions from the congested vessels. Frequently will it be found that all the peculiar discharges in cholera are arrested by bleeding and calomel, separately or combined.

As soon as any evidence of capillary reäction is manifested, the calomel should be followed up by the free exhibition of laxative medicines, such as the ol. ricini, senna, salts, Seidlitz powders, &c. all of which assist in exciting the natural secretions, and relieving congestion, and are also useful in emptying the alimentary canal of any irritating contents, especially the biliary and other secretions, as they are formed. Should the calomel and cathartics operate favourably, bilious and mucous dejections will be observed as substitutes for the serous effusions, which, with no beneficial tendency, were exhausting the powers of the patient.

On these principles, and by the above-mentioned remedies, the organic life in this first stage of cholera maligna, may be managed so that in very few instances will the patient pass into the second or collapsed stage, unless severe complications exist. . No benefit, I conceive, is derivable from the use of anti-emetics, or astringents, with the view of checking the vomiting and purging of serous fluids. These effusions will continue so long as the congestion remains; hence the best, if not the only certain means of relief, is to remove congestion by bleeding, and by those measures calculated to restore the natural secretions from the capillaries. So also no confidence was placed in any medicines said to arterialize the blood, such as the saline medicines recommended by Dr. STEVENS, formerly of Santa Cruz, and now of London. Believing that the morbid condition of the blood was owing to the diminution or suppression of the natural excretions from the lungs, liver, kidneys, skin, &c. I necessarily inferred that the best method of purifying the blood, was to restore the excretions, and believe that this view was confirmed by experience. For this purpose the saline medicines were useful, but as already hinted, were far inferior to calomel, or even the use of hot drinks, the warm bath, &c. &c.

In this stage, particular attention must be paid to the irritations existing in the organs of animal life, especially to the spasms, pain, intense thirst, &c.

The spasms are usually most severe at this period, and as formerly mentioned, seem to be intimately associated with *congestion* as an aggravating or exciting cause, being however essentially dependent on the peculiar morbid irritability of the nerves. Hence, the relief of congestion by *venesection*, warm bathing, diaphoretics, &c. as already advised, always mitigated, and sometimes immediately relieved the spasms. The tenderness of the surface, the neuralgic pains, and slight spasmodic actions which remain after congestion is removed, are easily combated by anodyne frictions, by external warmth, and by the internal use of camphor, opium, æther, &c. directly diminishing nervous excitement.

At this early period, the morbid sensation of thirst is becoming very distressing, and the anxiety of patients for *cold drinks* is exceedingly urgent. The free gratification of this desire is productive of much mischief by increasing the load and oppression at the præcordia, and aggravating the vomiting; and thus the exhaustion of the patient is enhanced by the quantity of fluid, and by the sedative influence of cold on the gastric mucous surface. Cold drinks if administered at all, should be given therefore in very small quantities, and at regular intervals, but in *ice* we have a most excellent substitute. Ice in small portions, allowed to dissolve in the mouth, is exceedingly grateful to the patient. It quiets this morbid sensation, and extending its influence to the nervous system generally, moderates its peculiar irritability, and the consequent restlessness, jactitation and anxiety which do so much mischief. Cold when thus administered has no perceptible injurious effects on the organic actions, indeed indirectly is useful to them, by quieting the nervous excitement which contributed to their further exhaustion.

3d. Should the above measures fail in arresting the course of cholera maligna, (which is very rarely the case,) the second or collapsed stage is witnessed, and very frequently, it is in this state, that patients are originally presented to the practitioner, either from neglect of early symptoms, or from the virulence of the disease.

As formerly shown, the state of the system and organs is similar to that in the first stage, but all the essential peculiarities of the disease are aggravated, particularly the torpor of organic life, and the morbid irritability of the nervous system. Hence the indications are precisely the same, but their fulfilment becomes exceedingly difficult, sometimes impossible.

The congestion and consequent oppression are greater, but the circulation is now so depressed, that blood can no longer be detracted in any quantity from the vessels of the extremities, or if a small quantity be procured, reäction does not follow, and sedation is increased. Venesection should therefore be abandoned in decided collapse. Some advantage is occasionally gained by the use of cups or leeches over the vital viscera, but they also detract but little blood, and seldom fulfil the requisite indications.

Hence, our reliance must be placed on the *direct* mode of facilitating reäction by the judicious use of suitable stimulants, internally and externally. The attempt to fulfil this indication was attended with much difficulty from the peculiar morbid condition of the nervous system. External heat for example, so useful and grateful in ordinary cases of prostration, was here *intolerable*, notwithstanding the coldness and lividity of the surface, and the stagnant condition of the cutaneous circulation. Even the common covering with blankets was unpleasant, and all applications of hot bricks, sand, oats, of alcoholic, or other vapours, created great distress to the sensations of the patient, and hence aggravated his restlessness, increased the coldness and lividity of the surface, and the effusions from the skin, and hastened the fatal progress of the disease. Frequently also sinapisms could not be tolerated, or indeed any powerful rubefacient.

Similar difficulties, although not to the same extent existed as to the internal exhibition of stimuli, particularly as regarded alcoholic preparations: these could seldom be administered. Even the drunkard no longer hankered for his accustomed potation, and in all cases, spirits seemed to be unpleasant, if not injurious. Hence the rule adopted at the Penn street Hospital was *to stimulate the organic actions as freely as possible, without disturbing the sensations of the patient, or in any way aggravating the nervous irritation.* Fortunately this rule could be acted on, and yet powerful stimuli be administered externally and internally.

Externally.—Simple frictions long-continued with the hand, flesh-brush, or coarse cloths, were very important in relieving the torpor of the vessels. They became still more valuable when made with liniments or ointments, rendered stimulating by means of the aq. ammoniæ, the oil of turpentine, the tincture of capsicum, &c. Occasionally sinapisms, especially if lowered by means of flour, would be tolerated, at least for a short time, and then could be removed to another portion of the skin, ("*Emplastrum volans,*") and very generally blisters, were borne without complaint. They were then very beneficial in relieving congestion and exciting capillary actions. A large plaster of cantharides was usually applied over the epigastric and sternum whenever the symptoms became serious, and frequently additional plasters to the extremities. If vesication were excited, stimulating ointments were used for the dressings.

Internally.—The stimulants best tolerated and apparently most efficacious, were the vegetable spices, especially cloves, ginger, and capsicum. The various preparations of æther, and of ammonia, also the oil of turpentine, were often advantageous; but of this class of remedies, nothing seemed to equal the capsicum, as well in its power of exciting capillary action, as in the little offence it gave the sensations of the patient. It could be freely administered. I adopted the following formula, which some eighty years since was recommended by Dr. STEUART, of London, for cynanche maligna:—Take three table-spoonfuls of common Cayenne pepper, and two tea-spoonfuls of fine salt; beat them into a paste; pour half a pint of boiling water on the paste, and strain when cold; add an equal quantity of strong vinegar. One table-spoonful was not unfrequently administered every half hour, for several hours in succession, and often with great apparent advantage. Camphor, opium, æther, and other narcotic stimuli were occasionally important, but should be given in small doses, and not too frequently repeated, as otherwise they would induce stupor, and perhaps aggravate the congestion, especially if reäction did not ensue.

But notwithstanding the importance and efficacy of these remedies, the main dependence, in most instances, should be placed on *mercury*, for reasons already advanced. If by the above-mentioned stimuli, the susceptibility of the tissues could be aroused, and life be thus protracted until a mercurial influence should be established, an evident and often a permanent effect will be induced. The capillary actions and secretions return, first internally, as indicated by the vomiting and purging of bilious matters, and by the discharge of urine; and then externally, as indicated by the pulse becoming gradually developed at the wrist, by diminution of the coldness and lividity of the surface, and increase of the cutaneous circulation. There is also a diminution or actual cessation of the effusions from the skin, stomach, and bowels. These favourable symptoms increase until the third, or recuperative stage of cholera be fully established, when of course a new and completely opposite condition of most of the tissues will ensue.

The manner in which mercury should be exhibited has been the subject of dispute, but in such critical circumstances, we should not incur the least risk of failing in an object involving the life of our patients, from timidity in the exhibition of approved medicines.

Hence I used mercury freely, internally and externally. Calomel was given in doses of gr. v. with gr. ij. of powdered capsicum every half hour or hour, until some sixty or eighty grains had been administered, or sometimes in doses of twenty grains every three or four hours, while blistered and ulcerated surfaces were dressed with the strong mercurial ointment, and frictions with this ointment combined with turpentine or capsicum, were made to the whole cutaneous surface.

Should any favourable indications appear, cathartics rendered more or less stimulating should be administered, to keep up the secretions now returning, and to carry off the excretions from the liver and mucous membrane which, remaining in the stomach or bowels, might oppress the powers of the system, or give rise to inflammation and its unpleasant consequences. Seidlitz powders, sulph. magnes. &c. were often given, as also the castor oil, oil of Croton, Warner's cordial, rhubarb, &c. I generally preferred a strong infusion of senna with ginger, as best fulfilling the required indications.

But while pursuing the above plan, attention should be paid to the removal of any additional cause of depression, particularly to that resulting from indigested food in the stomach and bowels. The best treatment is often unavailing when the stomach is thus oppressed by its contents, while all the symptoms of the disease are highly aggravated. Hence even in extreme cases of collapse, emetics are often of the greatest importance, and should be freely administered; hot brine, and also the mustard were frequently given; ipecac. and sulph. zinc. were much and advantageously employed. They had an effect, not only in relieving the oppression, but also in exciting the organic actions of the mucous membrane of the stomach and of other viscera.

For similar reasons cathartics were often to be given, even before secretions were restored, that the sources of depression from indigested food, fæces, &c. being removed, the system might more readily reäct.

When the spasms, which are generally moderate during this sinking state of the system, continue severe, partial relief may be afforded by powerful frictions, the use of the tourniquet, and the exhibition of antispasmodics, particularly the æther; but evacuations to relieve the congestion of the spinal marrow and brain are forbidden. The extreme sensibility of the surface, so intolerant of heat, is usually obviated by free exposure to the air, which relieves the restlessness and agitation arising from this cause, while the copious effusions from this tissue are moderated by the stimulating frictions and ointments already recommended, without offence to the sensations of the patient. The ointments and frictions seem very advantageous in diminishing the effusions and the coldness of the surface, by exciting the capillaries and lessening evaporation. *Ice* appears to be alone capable of allaying the tormenting thirst, with all its attending anxieties, and hence should be constantly supplied to the exclusion of cold drinks, which oppress the stomach and induce vomiting.

Should our efforts prove, as they sometimes may, successful, reäction ensues in some of the forms indicated, presenting states of the system and the organs with which we are more familiar, but which nevertheless manifest some peculiarities arising out of the previous condition of the solids and fluids.

It was formerly remarked that the symptoms of the stage of reäction might be advantageously arranged under four general heads, demanding some important modifications of treatment.

1st. Healthy reäction.—The only attentions requisite in such cases are for the prevention of mischief, by a diet nutritious but easy of digestion; by suitable tonics to invigorate the digestive apparatus and the general system; by the occasional employment of simple enemata, or the mildest tonic laxatives, to maintain the peristaltic motions of the bowels; by the occasional use of a tepid or warm bath, with frictions and warm clothing, and by moderate exercise in the fresh air, to encourage a healthy action of the surface, and invigorate the general powers of the system.

2d. The second state of reäction noticed, is where, with the return of the natural secretions, there is a morbid excitement of the brain and nerves, greatly endangering the life of the patient. The symptoms being exceedingly analogous to those of mania a potu were to be managed on the same principles, by supporting the organic actions by nutritious food, condiments, tonics, and even stimulants, while the nervous excitement should be moderated by rest, seclusion and narcotics carefully administered. Cups or leeches, assisted by cold to the head, and revulsives to the body and extremities, were valuable in diminishing cerebral irritation and preventing congestion.

3d. The third variety of reäction, in which some important viscus became the subject of active congestion or inflammation, was very dangerous from two circumstances. First—the imperfect reäction of the general system, as the pulse usually remained very weak, and the extremities cold, and even shrivelled; and second, the active determination of blood to viscera already oppressed by a passive congestion. Hence active and passive congestion were conjoined, and the system was exhausted or oppressed, forbidding the employment of active measures. The indications however were clear to unload the affected organs, and to diminish their organic excitement. The antiphlogistic course should be adopted as far as possible: general bleeding could very rarely be tolerated, but cups and leeches could be freely and frequently employed with great advantage. All stimulants should be abandoned, the diet should be very simple, and cathartics be freely exhibited, unless severe gastro-enteritic irritations exist. They are exceedingly useful, as evacuants and alteratives when bleeding is forbidden; particularly as so much congestion exists, and the secretions are so imperfectly restored; hence they should often be conjoined with mercury, unless the system be already under the influence of this mineral. Revulsives of every kind become very valuable as the sympathies are now reviving, to be applied not only to the still torpid extremities, but to the body, and especially over the affected organs. Much in this way may frequently be accomplished, although for reasons already stated, the engorgement could not always be obviated, especially in the old, infirm, and intemperate.

4th. The fourth series of phenomena characterizing the stage of reäction, were analogous to typhoid fever; no individual organ being the subject of such overwhelming congestion, but where the sedation of internal and external tissues was superseded by febrile irritation, generally with inflammation in some internal organ, and with some disposition to stupor. The treatment need not be specified being very similar to what is suitable in ordinary cases of typhus mitior.

From the pathological and therapeutical principles advocated, it would result, that the epidemic cause of cholera maligna is a sedative poison, causing a depression of the organic life, with some excitation of the cerebro-spinal system, differing therefore from the narcotic poisons, as opium, &c. which primarily excite the heart and arteries, and moderate nervous irritability. These narcotic stimuli might therefore be regarded as antidotes to cholera maligna, when not severe, or complicated with congestion, &c. Hence it may also be inferred, that the accessory causes of cholera epidemica impair vital power or action; some by a direct influence, as cold, profuse hæmorrhages, or other evacuations, anxiety, fear, &c.; others by an indirect operation, overwhelming vital actions, as indigestion from quantity or quality of the food, inordinate stimulation from food or drink, severe local irritation or inflammation. Finally, as a state of perfect health, where strength is greatest, and the functions are regularly executed, of course the blood equitably diffused to small and large vessels, is best calculated to resist injurious causes, the prophylactic measures must be based on the principle of supporting this normal condition in opposition to the depressing influence of the epidemic poison, as well as to the ordinary sources of disease. All inordinate stimulation from food, drinks, caloric, exercise, &c. are to be carefully avoided, while the organic actions are judiciously sustained at their healthy standard, by means already indicated.

My object was to present a selection of cases illustrating and confirming the observations and reasoning of this paper, but these from the want of space must be deferred. The following summary, from the Cholera Hospital, No. 4, on the Delaware river, in Penn street, south of Pine street, may be of some value as connected with this essay, and with the history of the epidemic in Philadelphia. Dr. J. K. MITCHELL was appointed Physician-in-Chief, but in consequence of severe sickness resigned. The hospital was then committed to my charge, and I was ably assisted by Drs. SMILEY, USELMA CLARKE, MUSGRAVE, and EDWARD PEACE.

Admissions from the 4th of August to the 1st of September, with the results.

Whites	27	Males 13	Females 14
Coloured	9	3	6
Deaths	10	5	5
Recoveries	26	11	15

Intemperate	18, of these 5 died.	
Temperate	15, " 3 do.	
Unknown	3, " 2 do.	

Total number, 36—Males, 16; Females, 20.

Ages.—Under 10 years, 2; from 10 to 20, 3; 20 to 30, 14; 30 to 40, 6; 40 to 50, 8; 50 to 60, 2; 70 to 80, 1.

The admissions from the 4th to the 7th of August, under the superintendence of Dr. J. K. Mitchell, were 9, (of these 8 were from the Arch street prison;) of whom 2 died, and 7 recovered. From the 8th of August to the 1st of September, 27 were admitted; of whom, 18 were in the first stage, and 9 in a state of collapse.* There were 19 recoveries and 8 deaths. Of those admitted in the first stage, all recovered; one only, J. Hines, passed into the second or collapsed stage three hours after admission, having been ill for forty-eight hours.

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* None were regarded as collapsed unless the pulse was exceedingly weak or imperceptible, so that venesection could not be employed, and the surface cold, livid, with shrivelled fingers, &c.

Of the 10 cases of collapse, including J. Hines, 4 died in this stage.

1 in 12	hours after attack--	4½	after admission.
1 in 36	do.	10	do.
1 in 9½	do.	5½	do.
1 in 24	do.	7½	do.

Six revived from the state of collapse.

Two recovered—1 after active congestion of the brain, on the 17th day after attack—14th after admission: 1 after severe nervous (cerebral) irritation, on the 12th after attack, and 14th after admission.

Four died—1 from congestion of brain, on the 3d day after attack—on the 2d after admission: 1 from nervous irritation, (as in mania a potu,) on 7th day after attack—on 6th after admission: 2 from typhoid fever—one on the 5th after attack, and 2d after admission—1 on the 5th after attack, and 5th after admission.

[We have unhesitatingly given insertion to the preceding remarks on cholera, although we are entirely at variance with the author, not only as regards most of his theoretical views and practical precepts, but also as respects some of his fundamental propositions and assumed facts. The substance of the antecedent memoir was read to the medical society of this city at their late session; and at the request of a number of the members, we were induced to lay before the society the very different views which our reading, reflexions, and personal experience have lead us to entertain. We propose, should there be space, to insert in our next No. the paper read on the occasion referred to, when the reader will form his own judgment. In the mean time, we will refer to our review of several works on cholera in the November No. of this Journal; to the statistics of cholera in the same No. p. 240; to our remarks on the pathology of cholera in the fifteenth and sixteenth Nos. of the Cholera Gazette; to the review of Cruveilhier on cholera in the present No. and to the valuable memoir of our collaborator, Dr. Jackson, in the two preceding Nos. for many facts, which, in our eyes at least, militate entirely against the doctrines of Dr. Hodge.]—Editor.

REVIEWS.

Art. XII. *Tablas Necrologicas del Colera-Morbus en la Ciudad de la Habana y sus Arrabales Formadas a escitacion del Escmo. Senor Intendente de Ejercito Conde di Villanueva.* Por Don Ramon de la Sagra. Habana, 1833.

Of the very many places which have been visited by the spasmodic cholera, since the appearance of that disease in America, there are few which have suffered in so dreadful a manner—where the pestilence has carried off so large a portion of the population in so short a space of time—as the Havana. To those who are acquainted with the topography of the place, with the nature of its localities and climate, this excessive mortality cannot be a matter of astonishment. They are well aware that the Havana is a seaport town, containing the sources of impure exhalations, so uniformly encountered in situations of the sort—that it is built in a manner little suited to correct the effects of those effluvia, and inhabited by a people, the lower portions of whom are far from holding cleanliness in the light of a virtue—that it contains a large population concentered within a narrow compass—that a considerable portion of that population consists of slaves subjected to great hardships and privations, and of free people of colour, who, like the same class in other parts of the world, are probably negligent of hygienic measures; intemperate in their mode of living; possess other habits of a nature calculated to render them more prone to the disease, and to increase the virulence of its attack, and destitute of the means requisite for commanding efficient professional aid; and finally, that it is subjected to the sanitary regulations of a government and medical corporation, entertaining opinions relative to the mode of propagation of the malady likely to lead to the adoption of measures totally inadequate to arrest or mitigate the progress of the evil. So far indeed were those aware of the above circumstances from being astonished, that by many with whom we conversed or corresponded, it was anticipated, last autumn, that the cholera would not be long before making its appearance in that city, and that when it did so, its ravages would be considerable. The result has unfortunately but too well shown that they were not deceived in their calculations.

The work before us is, we believe, the first that has appeared on the subject of the effects of the disease at the Havana. As its title sufficiently indicates, the researches of the author, Don Ramon de la Sagra, were undertaken at the suggestion of the Intendent. Hence the statements contained in it may be regarded as official, and entitled to confidence. From these circumstances, as well as from the interesting nature of the results recorded in this work, and the statistical information it contains, we have been induced to prepare and present to our readers a brief abstract of its contents.

The author's account of the mortality from cholera is not founded on the reports of the cemetaries. These reports, he discovered, indicated only the absolute number of burials, and afforded in consequence but a very imperfect basis for a classification of the dead according to colour, age, sex, &c. For this reason he had recourse to the parochial reports and documents, and obtained from them a great part of the information he required for the above purpose. But besides examining these documents, in the parish churches, both within and without the walls, Don Ramon procured and made use of the reports of admission in, and discharges from, the military and civil wards of the Royal Hospitals, of the temporary establishments for the poor, of the Royal Arsenal, and of the *Campo de Marto.* It is on this extensive set of documents, that his calculations are based. The result of these he has presented in the form of tables, containing statements of the daily mortality from cholera in the city generally, from the commencement to near the termination of the disease; of the number of deaths in each parish separately, as well as of that in each class of individuals, in each sex, at each period of life, &c.

It is very much to be regretted, that the author has not stated the amount of population of those parts of the district of the Havana, of the mortality of which, from cholera, he treats in the volume before us. Such a statement ought, in all publications of the kind, to be carefully made, and in this instance should not assuredly have been neglected, as it would have afforded the reader the means of making many comparisons and calculations, which the author has neglected to notice. He refers, it is true, on that head, to the census of 1828, which, it would appear, he himself drew up, as well as to his statistical work on Cuba—*Historia Economico-Politica y Estadistica de la Isla de Cuba.* But on referring to the latter, we find only the reports for 1792, 1817, and 1827. In the two first, the population of the Havana and its suburbs is stated separately, but in the last it is combined with that of the surrounding rural districts, and therefore cannot be ascertained satisfactorily. In the second volume of the Bulletin of the Statistical Society of Paris, we find that the population of the city and suburbs of the Havana amounted in 1827 to 70,595—32,355 whites, and 38,243 coloured people; and that in 1830, it amounted to 112,023, of whom 64,621 were white, and 47,402 coloured, (23, 562 free, and 23,840 slaves.) On examination, however, it was found, that neither the first nor the second of these estimates, which was furnished by Sr. De Sagra, (and which it is astonishing he did not make use of in the present work,) could have formed the basis of his calculations relative to the rates of mortality in the different classes of the population. The one is too small, the other too large. Hence we are left in the dark on that subject, and must content ourselves with the comparisons and calculations we find in the work before us. But be that population what it may, it results, from the researches of Sr. De Sagra, consigned in his large statistical work, that the average mortality in the Havana during the five years, 1825–29, amounted to 3113.4 annually; 1852.6 among the coloured people, and 1260.8 among the whites. From the present work, we learn that in the same period, the average relative mortality among the white and coloured population in the different parishes of which the city is composed, was—

In the Parish of the	*Catedral* -	34½	whites to	65½	coloured.
"	Santo Angel -	38½	"	61½	"
"	Espiritu Santo	32½	"	67½	"
"	San Cristo -	31½	"	68½	"
"	Nuestra Sra. de Guadalupe	47½	"	52½	"
"	Jesus Maria -	40	"	60	"

The relative proportion among the sexes in those two classes of individuals was, among the whites, 55 males to 45 females; and among the coloured people, 51 males to 49 females. If we have regard to the various classes of the coloured population, we find that the proportion in every 100 deaths was—

42	males to	58	females among	free mulattoes.
46	"	54	"	slave "
45	"	55	"	free negroes.
60	"	40	"	slave "

We have entered into these details in order to have some points of comparison in our subsequent remarks, and to be able to show the modifications occasioned in the rates of mortality by the cholera. The disease made its first appearance on the 26th of February, in the parish of Nuestra Sra de Guadalupe, which is situated on the outside of the walls, and contains a large number of narrow and filthy streets, inhabited by the lowest orders of the population. The deaths on that day amounted to five, three among male whites, one among the free male mulattoes, and one among the female slave negroes. From that day to the 20th of April, the epidemic prevailed with more or less intensity, and gave rise in that short space to a mortality of not less than 8,253. Of this number, Don Ramon de Sagra was able to ascertain the colour, condition, age and sex of 7,435. The balance, 818, is accounted for by 114 deaths, which occurred in the barracks, forts, and the floating hospital of the navy, and of which no registers were kept in the parishes and hospitals, as well as by 704 interments of which no details could be obtained.

From the 26th of February, the number of deaths increased till the 27th of March, when it attained its maximum,—380. From that date the disease gradually decreased until the 20th of April, when the number of deaths did not exceed 12, and the epidemic was considered to have ceased. The diminution of the mortality took place less rapidly than the increase; for on the 10th day of the epidemic, the number of burials exceeded 100; while on the 7th of April, or thirteen days before the termination of the reports, it was reduced to 60, and the disease had not disappeared at the end of that period. If, however, we take the whole number of days, from the commencement to the cessation of the reports, fifty-four, we shall find that a greater interval elapsed between the first cases and the period of maximum of the mortality, than between that period and the cessation of the epidemic. Be this, however, as it may, it will be found by examining the tables from which the above facts are derived, that from the 7th to the 18th of March, the average mortality exceeded 150; the extremes being 192, (17th,) and 55, (8th.) From the 18th to the 21st, the average was 265, the numbers varying from 380, (27th,) to 248, (18th.) From the 21st to the 20th, it amounted to 343, the numbers varying from 380 to 306. From that day to the 6th of April, the average mortality was reduced to 161; the extreme numbers being 293, (29th,) and 89, (4th April.)

The mortality among the whites did not amount to one-half of that among the coloured population; for of 7435 cases, of whom a detailed account was obtained by the author, 2365 were whites, and 5070 coloured. Nor were the deaths equally distributed among the sexes; for of the amount just stated there were 3954 males, and 3480 females. Indeed, as to the former there must probably be added, the greater number of deaths occurring in the barracks, forts and floating hospital of the navy, as well as of the unregistered cases, it results that the excess of mortality among males was really greater than is indicated by the above statement. But while such was the relative mortality among the sexes taken in the aggregate, without reference to colour, the proportion of deaths was not the same among the males and females of the white and coloured population taken separately, or even among each class of each colour. The following table will show the number of deaths among the males and females of those different classes in the 7435 individuals above mentioned:—

WHITES.	Males.	Females.
American	760	881
Spaniards	414	51
Foreigners	32	11
Undetermined	130	86
COLOURED.		
Free Creole negroes	438	632
Slave do. do.	219	258
Free African do.	492	521
Slave do. do.	980	590
Free Creole mulattoes	208	301
Slave do. do.	12	22
Undetermined	270	127

From these statements of the number of deaths from cholera, it results according to Sr. De Sagra, that the mortality, from that cause alone, amounted in the short space of fifty-four days, to about 8 per cent. of the whole number of the inhabitants. It will be found, however, from what we have stated relatively to the mortality in each class of individuals, and in each sex, that the proportion of deaths among them differed considerably. The following table, which we transcribe from the work under review, will establish this fact in a satisfactory manner:—

White males	5 per cent.
White females	4 "
Free male mulattoes	6 "
Free female do.	7 "
Slave male do.	6 "
Slave female do.	7 "
Free Creole negroes	10 "
Free Creole female negroes	11 "
Slave Creole male negroes	7 "
Slave Creole female negroes	6½ "
African free negroes	19 "
African free female negroes	17 "
Slave African negroes	10½ "
Slave African female negroes	8½ "

From this statement it will be found, that the largest mortality occurred among the free African negroes of the two sexes; that next to them the free Creole negroes, males and females, suffered in the highest degree; while the smallest mortality occurred among the whites and mulattoes.

By comparing the population of that part of the city which is situated within the walls, and that of the out parishes, to the mortality in each of those districts, Sr. De Sagra found, that the proportion of deaths in the various classes of inhabitants presented some difference:—

	Intra Muros. Per cent.	Extra Muros. Per cent.
Whites	4	6
Free mulattoes	9	7
Slave do.	3	16
Free negroes	17	12
Slave do.	8	12½

The extent of the mortality differed considerably in the different parishes. Of the 7435 deaths, of which, as we have already mentioned, an account was obtained by the author, the number in each parish was as follows:—

	Males.	Females.	Total.
La Catedral	228	140	368
El Espiritu Santo	275	479	754
El Santo Cristo	198	228	426
El Santo Angel	134	202	336
Jesus Maria	507	689	1196
Nuestra Sra de Guadelupe	1322	1196	2518
Nuestra Sra del Pilar, Jesus del Monte y el Cerro	568	362	930
Hospitals	723	184	907
Total	3955	3480	7435

It is proper to remark, that the three first of those parishes are inhabited by the genteel and wealthy classes of society; that they, as well as the fourth, are situated within the walls of the city; while the others are located on the outside. The relative proportion of deaths among the white and coloured parts of the population of some of those parishes was greatly modified by the disease, as will be found by comparing the results obtained in ordinary seasons, to the following statement of the proportion during the epidemic.

Catedral - - - - - - -	31	whites to	69	coloured.
Santo Angel - - - - - -	29	"	71	"
Espiritu Santo - - - - - -	28½	"	71½	"
Santo Cristo - - - - - -	27	"	73	"
Nuestra Sra de Guadalupe - -	34½	"	65½	"
Jesus Maria - - - - - -	27	"	73	"

As regards the relative mortality of the sexes in each class during the prevalence of the epidemic, it will be found, when compared to that noticed in ordinary years, to have been somewhat modified among the white, but not at all among the coloured population. Thus, instead of 55 males to 45 females in every 100 deaths among the former, the proportion was changed to 59 males to 41 females; while among the people of colour, the proportion remained the same as in ordinary seasons—51 males to 49 females. This similarity in the proportion, however, will only hold, if we have regard to the mortality among the males and females of the coloured population considered in the aggregate; for if we examine the mortality in the various classes of which that population is composed, the uniformity no longer will be found to exist. Thus instead of the proportions which we have stated to occur in each class, during ordinary seasons, it was discovered that in every 100 deaths, there were—

48	males to	52	females among	free mulattoes.
49½	"	50½	"	slave "
44	"	56	"	free negroes.
54	"	46	"	slave "

From an examination of these proportions, and a comparison of them with those obtained during ordinary seasons, it results, that the ravages of the epidemic was greater among female than male mulattoes, as well as among male than female negroes, both in a free and slave condition. In ordinary seasons also these occur, in every 100 deaths, 41 among the whites to 59 among people of colour. During the cholera the proportion was changed to 30 among the whites, to 70 among people of colour. In other words, the mortality among the whites decreased at the rate of 11 per cent, while that among the coloured population increased in the same ratio. The author remarks, that by comparing the ordinary average daily mortality of the Havana, to the average daily number of deaths during the prevalence of the epidemic, it will be seen that in general the former amounts to about 10, while during the latter period it rose to 153; consequently, that in the short space of fifty-four days, there perished in the Havana and its suburbs, as many individuals as usually die in the same place in the course of twenty-six months.

The following table will show the proportion of the mortality among individuals of various periods of life, and in each class of the population.

Periods.	Whites.		Free Mulat.		Slave Mulat.		Free Negroes.		Slave Negroes.		Totals.		General Total.
	Male.	Fem.	Male.	Fem.	Male.	Fem.	Male.	Fem.	Male.	Fem.	Male.	Fem.	
From birth to 7	307	257	60	51	7	9	139	137	93	91	606	545	1151
7 to 10	42	34	17	9	1	1	20	29	15	17	95	90	185
10 to 15	36	42	8	16	1	1	34	28	35	39	114	126	240
15 to 20	36	49	16	19	6	2	27	41	67	67	152	178	330
20 to 30	184	114	28	50	3	3	103	174	237	190	555	531	1086
30 to 40	145	110	18	52	2	6	95	163	140	121	400	452	852
40 to 50	161	85	12	34	1	1	90	154	73	58	337	332	669
50 to 60	101	87	16	16			72	108	46	25	235	236	471
60 to 70	68	53	4	16			29	77	16	10	117	156	273
70 to 80	19	37	4	6			19	32	9	7	51	82	133
80 to 90	13	19	2	2			4	13	1		20	34	54
Undetermined	338	142	40	40	9	12	351	240	649	284	1387	718	2105
Omissions -													704
Total - -	1450	1029	225	311	30	35	983	1196	1381	909	4609	3480	8253

By comparing the number of individuals who die at various periods of life in ordinary times, to that of persons who were carried off, at corresponding periods, during the prevalence of the epidemic, it will be found, that among the whites the mortality was greater during the cholera in persons between 20 and 60, and smaller in children and infants; although at that time the measles prevailed extensively among children. Among the coloured population, the number of deaths during the epidemic was more considerable in individuals between thirty and forty, and less so at other periods of life than is found to be the case at other times. This smaller proportion of deaths was particularly observable in infants and old people, among both of which classes the mortality was very small.

In ordinary seasons, the proportion of deaths in the two classes of the population—white and coloured, from birth to the tenth year, is found to be—

		White.		Coloured.
From birth to 1 year	-	66 per cent.	-	61 per cent.
1 3	-	21 "	-	19 "
3 10	-	13 "	-	17 "

But during the epidemic, the proportion in corresponding periods, was—

		White.		Coloured.
From birth to 1 year	-	32 per cent.	-	27 per cent.
1 3	-	29 "	-	30 "
3 10	-	39 "	-	43 "

This fact, as the author very justly remarks, confirms the observation already made, that children and infants are much less prone to the disease than adults.

Sr. De Sagra was not able to collect information relative to the professions and trades of the individuals carried off by the disease—to their modes of life, habits, dwellings, &c. Yet, from the documents he had the opportunity of consulting, he thinks, he can conclude, that the most vicious were not more prone than others to the disease; and that the pestilence was particularly destructive among individuals exposed to the greatest privations. The wealthy portions of the city presented the smallest mortality; while, on the contrary, the largest number of deaths occurred in the most populated districts. In order to compare the mortality in the various parishes, it is necessary to be apprised of the circumstance, that of the great number of deaths among coloured people, which occurred in the parish *Del Cerro*, more than one-half proceeded from the depositories of runaway negroes, and other establishments situated within its jurisdiction.

The author of the work of whose contents we have thus offered a brief analysis, is not a member of the medical profession. Hence he has abstained from entering on a variety of subjects, which would have proved interesting to his medical readers, but most of which, as experience has served to convince us, physicians alone can with propriety undertake to elucidate; as, for example, the history of the disease, its origin, mode of propagation, character, as well as the textural alterations revealed on dissection, the most beneficial modes of treatment, and the proportion of deaths to the sick. It is to be hoped, that some experienced and intelligent practitioner will, ere long, furnish to the medical public the desired details on each of these points.

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Art. XIII. *Anatomie Pathologique du Corps Humain, ou Descriptions, avec Figures Lithographiées et Coloriées, des Diverses alterations Morbides dont le Corps Humain est susceptible.* Par J. Cruveilhier, Professor d'Anatomie, a la Faculté de Médecine de Paris; Médecin de la Maison Royale de Santé; Chevalier de la Légion d'Honneur; Membre de la Académie Royale de Médecine; Président perpétuel de la Société Anatomique, &c. Quatorzième Livraison, et 14, liv. bis. *Maladies de l'estomac et des Intestins.* (Cholera Morbus.) pp. 52, folio. Plates 5.

THE appearance of the fourteenth Livraison of the magnificent work of M. Cruveilhier* affords us an opportunity we have long desired, of presenting to our readers an account of the researches of the anatomico-pathological school relative to cholera. Though far from subscribing to the peculiar doctrines of that school, we attach a high value to the labours of its disciples. They are perhaps unrivalled in the minuteness and care with which they conduct post mortem examinations; and the observations which they are now industriously collecting, will constitute the most precious materials for the construction, by others, of an enduring system of medical doctrine. It is not by them, however, that such a system can be erected; the foundation upon which they are attempting to raise their superstructure is unsound. They have attempted to introduce into pathology the mode of classification adopted in natural history, and seem to think that they will thus invest the one with the precision and certainty of the other. The characters presented by morbid structures offering the only foundation for such a classification; they have endeavoured to arrange diseases according to the alterations found in the structures after death. Their pathology is founded directly upon anatomy, and the morbid lesions discovered on post mortem examination have thus assumed a predominant importance. But these lesions are not the disease, they are merely the results of disease—they are the products of derangement of the functions, and it is this derangement of function which constitutes disease, and against which our remedies are to be primarily directed. Hence it is upon physiology that pathology must be immediately based, and morbid anatomy cannot be correctly studied except through the medium of physiology.

From their mode of viewing disease, it has become a fudamental maxim of the school just alluded to, that every organic alteration not constantly *observed* after a disease, cannot be considered as an essential part of that disease. Now while we are disposed to admit, that no derangement of function can exist without some change of structure; it is a fact which cannot be disputed, that this alteration may be sufficient to occasion death, and yet our most careful investigations fail to detect it on post mortem examination. Such cases, and they are numerous, though their number has been exceedingly reduced by the modern improved methods of examination, can never enter into the system of the pathological anatomists. But what is worse is, that with them the exception makes the rule. Thus, in any disease, although in ninety-nine cases out of a hundred, a certain organ is always found diseased, yet if in the hundreth, no lesion of it is discovered after death, it is at once adopted as a rule, that derangement of that organ is not essential to the disease; and this, although the functions of the organ may have been manifestly disordered during life, and no lesion be discoverable in any other organ to account for death.

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* This work was commenced upwards of five years since, but after reaching the eleventh No. its publication was stopped. It has recently been recommenced, and we trust will be continued uninterruptedly to its completion.

We will not at present dwell further on this subject; but these few remarks seem necessary, both because the doctrines of the anatomico-pathological school are not well understood in this country, and still more because an adoption of them would be a complete bar to any correct general conclusions relative to the pathology of cholera.

It is only necessary further to remark that M. Cruveilhier is a member of the anatomico-pathological school. He appears however to be awakening to the errors of that school, and he unquestionably may be ranked among the most distinguished pathologists of the day. His great work of which the fourteenth number is now before us, stands unrivalled in the beauty and accuracy of its illustrations. This number is devoted to the consideration of cholera morbus, and contains five folio plates representing the appearances exhibited by the stomach and intestines of those who die of that disease.

To arrive at a correct knowledge of the nature of cholera, it is not sufficient to study the most severe cases—those which prove fatal in a few hours. From such cases little comparatively is to be learned. To obtain a full and correct view of the disease, it is necessary to investigate, 1st, the epidemic influence in its mildest effects, and when not productive of cholera; and next, the disease in its various grades. This M. Cruveilhier has done. He commences his work with some general considerations relative to cholera morbus, and then treats in succession of the pathological anatomy, the pathological physiology, and the therapeutics of the disease. His general considerations embrace four heads, 1st, the epidemic influence in its mildest effects, and not productive of cholera; 2d, choleric diarrhœa; 3d, mild cholera, *(cholera moyen,)* 4th, violent cholera, *(cholera très grave,)* with or without asphyxia.

That so few persons in Paris entirely escaped the epidemic influence, is attributable in part M. C. thinks to circumstances foreign to the medical constitution. The anxiety and fear, kept up by the perusal of the daily papers; the multiplied, frequently absurd and often injurious precautions taken to protect from the disease; the preventive remedies devised by charlatinism and adopted by credulity; the exclusively heating diet recommended officially, and rigidly employed by those even who had for years been accustomed to an opposite diet, all he thinks favoured the extension of the disease. Another circumstance which did not a little contribute to the same result, was the popular instructions for the treatment of cholera generally distributed, so that every family was provided with drugs, and thought themselves competent to apply the remedies at the onset of the disease.

> "I cannot" says M. C. "relate here all the cases, in which on the slightest uneasiness, on the occurrence of a spasm often caused by fright, the whole family in alarm, surrounded the supposed patient with bags of hot sand, overwhelmed him with blankets, and excited excessive sweats by the vapour produced by pouring vinegar upon hot bricks; whilst at the same time peppermint, ammonia, simple or camphorated ether, or laudanum were administered internally, with the temerity of ignorance, so that when the physician was called, he experienced some difficulty at first in distinguishing this factitious from a real disease. The cessation of these incendiary measures did not always suffice to dissipate their effects."

The epidemic influence aided by the various other influences, to which allusion has been made, manifests itself by different phenomena, according to M. Cruveilhier. Sometimes by nervous symptoms, as vertigo, lassitude, cramps, &c.; sometimes by a *febrile paroxysm* of twenty-four or forty-eight hours duration, &c. The occurrence of preternatural vascular action at the commencement of an attack of cholera, has also been observed by Greenhow* in some cases, and we have ourselves met with it in one or two instances. M. Cruveilhier agrees with the most careful and accurate observers, that it is the digestive functions which most frequently manifest disorder. Epigastric uneasiness, spasms of the pharynx or œsophagus, anorexia, vomiting, bilious diarrhœas, nausea, borborygmy and colics were never more common than during the prevalence of the epidemic. Great irritability of the gastro-intestinal mucous membrane was manifested by the violent action of the mildest purgatives, and the difficulty in curing many cases of gastritis and enteritis, apparently slight; and also their tendency to return on the slightest imprudence in diet.

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* Cholera as it recently appeared in Newcastle and Gateshead, p. 13.

"Obliged to give, at the hospital *à la Maternité*," says M. C., "purgatives in certain puerperal diseases, I found half an ounce of the mildest castor oil produce superpurgation." p. 3.

In some cases the epidemic influence was exerted principally upon the stomach, inducing *irritation* of that organ. This was manifested, according to M. C., by a sensation of heat, with increase of sensibility or simply uneasiness at the epigastrium, increased on inhalation, so that the patient could not draw a full breath. This was attended with heat and pain, or uneasiness along the œsophagus and pharynx; thirst, with desire for acid and cold drinks. The smallest quantity of liquid taken into the stomach, produced a sensation, as if lead had been swallowed; at the same time there was constipation, nausea, efforts to vomit, &c. General bleeding, leeches to the epigastrium, baths, abstinence from drinks, iced seltzer water, or small portions of ice *alone*, succeeded best in relieving these symptoms. M. C. notices another and more intense form of this gastric irritation, and which he describes as manifested by constant anguish, of which the epigastrium was the centre, and which sometimes extended the whole length of the œsophagus, and at others around the base of the thorax; with vomiting, excited by the slightest motion, or by the ingestion of the smallest quantity of drink.

In other cases the small intestines were principally affected by the epidemic influence. The symptoms here, were colicky pains at the umbilical and hypogastric regions, of more or less intensity, and either continued or intermittent; sometimes disgust for food, constipation, in some cases febrile action at night, &c. When these symptoms were not arrested, the irritation extended to the stomach and large intestines, and proved fatal. On post mortem examination, the gastro-intestinal mucous membrane was found extensively reddened.

In a third class of cases the epidemic influence was particularly directed to the large intestines, and manifested itself by bilious diarrhœa, and was in general more readily cured than the preceding.

"In an immense majority of these cases," says M. C., "diet, rice-water, baths, sedative enemata, sedative potions and leeches to the anus effected a cure." p. 4.

"Finally," he adds, "many individuals previously affected with the grades of irritation known by the name of chronic gastritis and enteritis, have suffered from an aggravation of the symptoms, which must be attributed, in great part, to the alterations in their diet."

M. Cruveilhier justly maintains that no diarrhœa should be considered as choleric, unless it is liquid, nearly inodorous, and resembling turbid whey, or rice-water with some grains floating in it. The choleric stools are, however, always preceded by discharges of fecal or imperfectly digested matters. M. C. does not consider the complete absence of the colouring matter of bile as essential to characterize the choleric stools, it is sufficient that they are watery and flocculent. In some cases he asserts, that the secretion of bile appears as much augmented as the intestinal secretion. The excessive abundance of the choleric stools, in many cases, are noticed by M. C., and he states that they are sometimes *attended* with *griping* and *colic.* (p. 4.) He considers opium as a specific in the treatment of these cases; and states that he has met with very few choleric diarrhœas which have resisted this remedy when properly administered. He prescribes it, 1st, in the form of enema, ten or twelve drops in a little starch repeated every two or three hours; 2d, a potion, consisting of cinnamon water, mint water, orange-flower water, syrup of ether, of each half an ounce; laudanum, twenty-five drops, a spoonful every hour; 3d, for drink, rice-water with gum Arabic, in small quantity, or the white decoction without cinnamon.

The *temperature* of the enemata and drinks, M. C. considers as a fundamental point in the treatment, and he states that cool or even cold drinks and enemata have been attended with a success, which has often astonished him. In our number for November last, p. 172, we were led by our pathological views of the disease to recommend cold enemata, and we are happy to have their utility confirmed by the experience of so careful an observer as M. Cruveilhier. He states that he was led to their employment by chance. In a case of sporadic cholera, in which opium had failed, the patient having experienced a sensation of burning, whenever a warm enema was given him, took one of cold water, and the diarrhœa was instantly checked. M. C. states that he is also indebted to chance for a knowledge of the efficacy of very warm enemata. One of his patients, who was affected with a marked choleric diarrhœa, took an enema which produced a sensation of burning, followed by a complete cessation of the diarrhœa.

> "With the opium and cold enemata may be associated," says M. C., "in a great many cases, leeches to the anus or over the course of the colon, as employed by M. Broussais, emollient baths, emollient cataplasms, and sometimes abstinence from all drinks."

M. C. employs general blood-letting only when particularly indications demand it.

Choleric diarrhœa may become chronic and degenerate into enteritis, or it may change into cholera. The first is to be treated by the ordinary remedies for diarrhœa and enteritis, as leeches, emollient baths, opiate draughts and enemata, cold enemata, sinapisms to the lower extremities, and sometimes to the abdomen, rigid diet, the white decoction without cinnamon, as the sole article of drink and food.

M. C. is of opinion, that there are three forms of choleric diarrhœa; one which will not degenerate into cholera, another which is only the precursor of cholera, and which runs into it in spite of every remedy; and a third, which may be readily cured, but degenerates into cholera by errors of diet, or when neglected. The two first M. C. admits to be very rare, and only exceptions to the rule; and he says that when a choleric diarrhœa has been cured, we may in general flatter ourselves that we have prevented an attack of cholera. He further adds, that he has never seen a case of choleric diarrhœa properly treated from the commencement, which had degenerated into cholera.

Between the most severe cases of cholera, those which tend directly to destroy life, and choleric diarrhœa, many cases of intermediate severity occur, which M. C. describes under the term of mild cholera, *(cholera moyen.)* Of this class of cases, some have a tendency to get well under a rational and simple treatment, and others with an appearance of great mildness, are really extremely dangerous, and proceed to the extinction of life in spite of all the efforts of art. M. C. therefore, considers mild cholera as being sometimes a less severe form of violent cholera, and at others, as the first stage of the most violent form.

Mild cholera, he states, commences like every other grade of cholera, almost constantly by a more or less protracted, and more or less considerable choleric diarrhœa, which suddenly becomes aggravated from improper diet, &c. The change of choleric diarrhœa into cholera, is announced by vomiting, painful cramps of the extremities, violent thirst, epigastric distress, change of countenance, sunken eyes, feeble voice, disposition to coldness, sinking of the pulse; all symptoms indicative of the disease being no longer local, but that the nervous centres are simultaneously and deeply affected. These do not, however, all present themselves in every case; there is almost always a predominance of one or other of them; and several of them are frequently entirely absent.

Thirst, epigastric distress, alteration of the countenance, weakness of the pulse, feebleness of voice, suppression of urine, and a disposition to coldness, are the constant symptoms. Evacuations from the bowels are, in some rare cases, wanting, M. C. states, and he considers their absence as a bad sign, justly remarking, that—

> "It denotes not a suppression of the flux, but simply a want of excretion of the secreted fluids. It is easy indeed to verify the presence of fluid in the intestines, by pressing upon the abdomen, which produces a gurgling sound, similar to that from a partially filled barrel; or better by percussion of the abdomen, which yields a peculiar sound, indicating the excess of fluids over the gases. *There is often tenesmus, as in dysentery;* and bloody stools are not unfrequent." p. 11.

M. C. has also seen cholera insensibly replaced by dysentery, showing, he remarks, the affinity between the two diseases.

Vomiting, M. C. represents, as well as all other writers, as being sometimes the predominant symptom; he has rarely seen it entirely absent. It is not however very unfrequently absent, as might be shown by a host of evidence.

The suppression of urine, M. C. has found a constant phenomena. He considers it with the best pathologists, as resulting from the physiological law, by which the secretions mutually replace one another. Its reëstablishment is an unequivocally good sign. Cramps, M. C. states to be one of the least, and *epigastric distress the most constant* symptom of cholera.

Mild cholera when it does not run into cholera asphyxia, presents according to M. C. two marked periods, 1st, that of *concentration*, and 2d, that of reäction. The reäction may be incomplete or temporary, and may become fatal.

> "The adynamic or typhoid state often, says Mr. C. replaces the choleric. The patients may also resist these consecutive phenomena; but some of them die, and on examination after death, *unequivocal signs of inflammation of the gastro-intestinal mucous membrane are found.* This adynamic or typhoid state which has destroyed so many patients supposed to be convalescent, has been common to all the forms and all degrees of cholera, from simple diarrhœa to algid cholera. It has been especially fatal to aged persons, to valetudinarians, and those who had previously laboured under chronic gastritis and enteritis. It has also appeared to me that a stimulating treatment too long continued, may after having appeared to resuscitate life, favour this termination." p. 13.

M. C. quotes several cases illustrative of this form of cholera, and of the treatment he pursued in it.

The most violent grade of cholera presents itself in two forms. In the first the patient is of a blue colour, as in cyanosis or in asphyxia from carbonic acid gas; in the second the patient does not exhibit that colour. The first form usually proves fatal in a very short time, and has been termed blue cholera, cholera asphyxia, and algid cholera. In the second form, which is not less violent, although it is not so rapidly fatal, the countenance is as much changed, although not of a blue colour; and the contractions of the heart propel the blood to the extremities of the circulatory system. The chemical phenomena of respiration are also partially performed, and the coldness of the body is not algid. M. C. designates this form, by the name of very violent cholera without asphyxia.

It seems to be still doubted by writers, whether cholera is always preceded by what have been termed premonitory symptoms. Most of the writers, and especially those who have had the most extensive means of observation, and have investigated the subject most carefully, assert that it almost invariably is, and M. C. is of the same opinion. He states that "it is excessively rare for the most violent grade of cholera to commence without premonitory symptoms."

> "I know," he adds, "that many persons have been seized with the most violent symptoms, whilst engaged in their ordinary occupations, on a journey, or during a walk; but in general the first symptoms come on at midnight or towards morning, after a quiet sleep; but on inquiry I have almost always ascertained that the invasion of the cholera had been preceded for several days by a more or less marked derangement of the digestive functions. It is important here to remark, that in proportion to the length of time that the premonitory symptoms have continued, even when slight, and especially where they have alternately increased and diminished, the more sudden and overwhelming will be the disease. It is perfectly intelligible, that a lesion which has been long preparing, must when it takes place produce more violent effects, than one which occurs suddenly without antecedents."

The symptoms of cholera asphyxia have been so frequently detailed, that it is not necessary here to notice M. Cruveilhier's account of them, especially as he has offered nothing new on the subject. There is one remark, however, respecting convalescence, which strikes us as just, and is worth repeating. M. C. states that he has never seen rapid convalescence from a very marked choleric state; but that all the patients he has seen have had a more or less troublesome recovery. He therefore thinks it probable, that the cases of algid cholera reported as rapidly cured, were really mild cases, which presented an appearance of violence from the presence of spasms.

Violent cholera without asphyxia, affects less immediately the principle of life, and is more in the power of therapeutic agents. Reäction so rare, at least in a decided degree, in cholera asphyxia, is in this form more or less completely established. In both forms however, M. C. considers reäction essential to recovery; but there are some forms of cholera so intense that reäction cannot be excited by any means. In this form of cholera, death occurs as frequently, though not as promptly as in cholera asphyxia.

M. C. next gives us a summary, of the appearances presented in the different organs, after death from cholera, but as we have dwelt upon this fully in a former number, and as M. Cruveilhier's observations are in accordance with what we have already given, we shall proceed at once to his analysis of the symptoms of the disease.

Cholera asphyxia he remarks, appears at first to be incapable of analysis; innervation, circulation, and respiration are simultaneously and profoundly affected; life is menaced at its source, as if the patient was under the influence of a deleterious agent: he presents all the symptoms of poisoning: he dies asphyxiated. But if in place of studying at once cholera in its most violent form, we view the disease in all its grades, if we pass successively from choleric diarrhœa to slight cholera, to moderate cholera, and finally to cholera asphyxia, we shall be insensibly led to establish the most probable source of the symptoms, and their connexion.

> "Now the affinity which exists between choleric diarrhœa and cholera, is an incontestable fact; we have seen indeed, that if a certain number of persons be suddenly attacked with the most severe symptoms, cholera still more frequently commences by a choleric diarrhœa neglected, or badly treated."

We ought therefore to consider choleric diarrhœa as the first degree of cholera—as cholera in its least severe form. But the choleric diarrhœa is nothing else than an intestinal flux, a serous and mucous diarrhœa, which *is very analogous to that which results from superpurgation.* This diarrhœa which is accompanied so often by tenesmus and colics, brings on almost immediately, when it is very abundant, a considerable emaciation, a complete prostration of strength, weakness of the voice, tendency to coldness, and light cramps; all of which symptoms are too evidently a consequence of the sudden concentration of the vital forces upon the intestinal canal, and the loss of substance by alvine evacuations, for it to be necessary to establish their correlation.

In choleric diarrhœa, M. C. justly regards the disease as local, whilst in cholera the system participates in the lesion.

We have elsewhere maintained the analogy which exists between the symptoms of cholera and those produced by the acrid poisons, and we are happy to adduce the experience of M. Cruveilhier in our support. This analogy has been noticed by Morgagni, and almost every writer since his time, and emphatically pointed out by Christison in his valuable work on poisons. As the resemblance has, however, been denied by a writer in the present number of this Journal, (p. 412,) we shall quote M. Cruveilhier's own words.

"The study of the phenomena resulting from poisoning by arsenic, appears to me to throw the greatest light upon cholera; as soon as the poison has touched the gastro-intestinal mucous membrane, local symptoms appear, which denote a violent irritation of this membrane, and general symptoms, by which the severe blow which is carried to the vital forces is revealed; *for the local and general symptoms of poisoning have the greatest analogy to those of cholera;* in both cases, there are cramps, epigastric distress, oppression, hiccoughs, vomitings, extinction of the voice, smallness or cessation of the pulse, coldness of the surface of the body, sometimes carried even to icy coldness. Called to an individual who was suddenly taken with the symptoms I have just described, and who would make no confession, I informed the attorney of the king, that if the disease was not cholera, the patient had been poisoned; he died in my presence, about three hours after the attack of these symptoms. On opening the body, we found in the stomach fragments of arsenic.

"Observe also strangulated hernia: an inch of the circumference of the intestine is pinched; immediately appear hiccoughs, vomiting, depression of the pulse, extinction of voice, all the symptoms which denote a profound lesion of the nervous visceral system; and the patients sink under these nervous symptoms when the local lesion is very slight.

"The more I reflect, on the one hand, upon the succession of the phenomena in the greater number of cases of cholera, on the other, upon the effects of a rapid concentration of innervation, and of fluids upon a surface so sensitive and so vascular as the intestinal mucous membrane, the more I am justified in seeing in this concentration, in the serous and mucous diarrhœas which follow it, the most general fact that can be arrived at by the observation of the symptoms, and by pathological anatomy; and without pretending to explain by it all the symptoms, it will suffice us to establish a correlation between this diarrhœa and the incomplete and gradual asphyxia, the unquenchable thirst, the præcordial anxiety, the vomitings, the hiccoughs, the cramps, and in fine, the diminution of the beatings of the heart, whose contraction reduced to a simple quivering, no longer throws the blood into the large vessels. It appears to me impossible to point out the limit which separates the cases where the disease is purely local, and suits itself to the state of equilibrium of all the functions, from those where the equilibrium being destroyed drags with it all this train of formidable symptoms. It is sufficient for us to prove the fact of this rupture of the equilibrium of innervation, a rupture which we find in all severe diseases, and which ought to vary prodigiously according to individuality and a thousand other circumstances."

M. Cruveilhier seems not to have arrived at sufficiently clear or precise views, relative to the pathological condition of the gastro-intestinal mucous membrane in cholera. He states that pathological anatomy appears to him to have demonstrated that cholera morbus does not essentially consist in an inflammatory fluxion, or phlegmasia of the gastro-intestinal mucous membrane, unless, he adds, the sero-mucous fluid, which constitutes the choleric stools, be considered as sufficient to characterize inflammation in the absence of all coloration and injection of the mucous membrane which he does not. Now, M. Cruveilhier himself, admits that there is a fluxion to the gastro-intestinal mucous membrane, and the absence in some cases, of all redness of that membrane is explained by the excessive secretion, the arteries being in a state of excessive action, pour out immediately by their exhalants, a portion of their blood, and force into the veins the remainder. M. Cruveilhier also admits, that the inflammation of the serous membranes may be adduced in support of this opinion, since inflammation is characterized in them by the presence of a product of sero-purulent secretion, without any coloration of these membranes; though he thinks that the analogy will not hold, in consequence of the difference of texture and vitality of the two tissues. But the existence of fibrine in the secretions from the intestinal mucous membrane in cholera, detected by Christie, Thompson, and O'Shaughnessy, an undoubted product of inflammatory action, is conclusive to our minds; and M. C. admits, that there is the greatest analogy between the fluxion to the intestines in cholera, and that which constitutes inflammation.

> "Anatomy and pathological physiology," he states, "unite in demonstrating in a manner not less peremptory, the *great affinity* which exists between the mode of fluxion to the intestines, which results in the sero-mucous secretion of cholera, and the mode of fluxion which constitutes inflammation; so much so, that many individuals who die of cholera after reäction, exhibit unequivocal traces of inflammation. Cholera considered in an anatomico-pathological point of view, and with respect to the intestinal canal, *must then be arranged in the great class of irritations.*"

This, it appears to us, is admitting all that can be demanded, and all that we have ever contended for, viz. that in cholera, there is an active fluxion to the intestinal canal, in some cases causing excessive secretion, in others attended by ordinary inflammation.—(See the November No. of this Journal, p. 168.) M. Cruveilhier has overlooked the fact, that the blood-vessels of the gastro-intestinal mucous membrane perform two distinct functions; that one set of vessels are appropriated to secretion, and another to nutrition, and that it is these last which are concerned in inflammation. When the former set of vessels are in a state of excessive activity, they appropriate to themselves all the blood determined to the mucous membrane, pour out a portion of it into the intestines, and throw the rest into the veins, which last thus become engorged. But when the secretions are not so excessive as to prove a complete drain, the surplus blood is received by the nutritive vessels, and we have the phenomena of ordinary inflammation; further, when the secretions are wholly suppressed without the afflux to the intestines being diminished, we have all the blood determined to the nutritive vessels, with the natural results—a violent gastro-enteritis.

The indications of treatment, acccording to the views of M. Cruveilhier, are to resuscitate life during the period of concentration; to direct the reäction, and to dissipate the fluxionary disorders which succeed the terrible struggle of the vital forces against the morbid cause.

Among the measures calculated to assist in inducing reäction, M. C. appears to consider frictions to the skin as useful. He says that at first they were abused; and subsequently, without sufficient reason, completely renounced. *Heat*, he remarks, was borne by patients with great impatience, that their skin remained icy cold in the midst of hot vapour; that when the heat was continued, the oppression and distress was aggravated; and that many practitioners therefore renounced them. In this city similar effects were observed to follow their use.

M. C. has not used ice externally, except to fulfil certain indications. He has found that when applied to the epigastrium, it sometimes arrests the vomiting and relieves the distress in that region; and that frictions with it upon parts affected with cramps, sometimes arrest that affection.

Every possible means of irritating the surface seems to have been tried, with little apparent advantage; M. C. thinks, however, that a strip of blister, the whole length of the spine, was somewhat useful. Baths of all kinds have failed to produce any marked benefit; M. C. however, is of opinion, that local vapour douches might be employed in some cases with advantage.

M. Cruveilhier thinks that moderate diffusible stimuli are useful. But, he remarks, that—

> "All experience has proved, that if stimulants in small doses are useful in the period of concentration to revive life, when too long continued, or when given in too large doses, they may be injurious. We should never forget, in the administration of stimulants, that in cholera there is a fluxion to the mucous membrane, and that there is imminent danger of inflammation in the period of reäction."

The stimulant he recommends is the following:—℞. Cinnamon water, mint water, Syrup of ether, āā. ℥j.; Acetate of ammonia, ʒj. To be taken in spoonful doses.

Experience does not justify, M. C. states, the use of bark.

Opium, he says, so efficacious in choleric diarrhœa and mild cholera, is counter-indicated in cholera asphyxia, by the apparent comatose condition of the patient.

> "Given in large doses in the period of concentration, it has appeared to oppose reäction, or to plunge the patients into a state of coma, in which they expired. Nevertheless, I have not, in any case, entirely neglected their use: my object in giving them was to diminish the intestinal secretion, the existence of which I admit, although the product was not always discharged externally."

The preparation of opium preferred by M. C. is the theriac or diascordium. Musk, camphor, and castor do not appear, he says, to have fulfilled the expectations of practitioners. He has not used the extract of rhatany, but he says that many respectable practitioners assert it to have been useful.

Of emetics, M. C. does not appear to have had any personal experience, but he states, that they do not appear to have been as useful as their advocates proclaim, nor as injurious as has been asserted by some practitioners.

As to purgatives, he says, that—

> "In a disease characterized by an excessive fluxion to the mucous membrane, it appears to me irrational to promote this fluxion; and although the mode of irritation of cholera may be different from that of drastic purgatives, I believe it prudent to abstain from them until positive facts shall have unequivocally established their utility."

We should have some difficulty in believing that any physician should be so irrational as to recommend them, were there not the most positive testimony of the fact. The extraordinary mortality of the disease in those places where it is known that purgatives were recommended, furnishes a sufficient commentary on their use.

As to the proper drinks, M. C. remarks—

> "A burning and unextinguishable thirst is one of the principal torments of patients, and in the immense majority of cases, they desire cold drinks. They revive at the sight of a fluid, and especially of a cold one. They devour pieces of ice, which they are told to allow to melt in their mouth, and we cannot relate all the service that ice has rendered in this disease. However, in the stage of asphyxia I have had recourse to very warm drinks, as tea or coffee, and it has appeared to me that reäction more promptly occurred than when iced drinks were given.
>
> "Is it proper to allow the patient to satisfy his thirst, or is it better to allow him drink only in very small quantities at a time? This question is still in dispute. In general, drinking too copiously has appeared to me to promote vomiting. However, several practitioners have doubted the necessity of making patients suffer thirst; and hope by allowing them to drink abundantly, to repair the excessive deperdition of liquids produced by the alvine evacuations. This idea deserves attention."

When the vomiting is obstinate, M. C. has found iced Seltzer water eminently useful.

During the period of concentration he thinks that very warm enemata should be preferred to cold ones; and they should be renewed every half hour, hour, or two hours according to circumstances. When the discharges from the bowels are excessive, iced enemata have been he says very useful. He often alternates the hot and cold enemata, and adheres to one or the other according to their effects; and almost always adds to them a few drops of laudanum or of theriac or diascordium.

M. Cruveilhier thinks that it is to be regretted that the effects of the application of remedies to the respiratory mucous membrane have not been more fully tested; at present we have little however positive in favour of such applications.

Blood-letting so much lauded by the Indian writers, was tried by M. C. in every case of cholera asphyxia which he treated, but he found what has happened to every one else, that in the period of concentration it is impossible to get any blood. He has never tried arteriotomy, but he has known the brachial artery to be severed, and only a few spoonfuls of blood to be obtained. After bleeding M. C. constantly employed leeches to the epigastrium, along the sternum, and upon the sides; and after they had fallen off, he promoted the bleeding by cups.

The desperate state of the patient alone M. C. considers to justify recourse to venous injection, and that it cannot be admitted among the resources of our art, until numerous and positive facts shall have proved that it does not endanger the life of the patient.

At the commencement of the period of reäction, M. C. considers bleeding as contra-indicated, and that it is only proper when the reaction is complete, the perspiration has ceased, and there are symptoms of congestion of some organ. If too early resorted to, it will arrest reäction, and the patient will fall again into collapse, which will quickly be followed by death. Leeches are not attended with the inconvenience of bleeding, but they must not be abused: reäction the conservative effort of nature should be directed and not stopped. Leeches are extremely useful, applied to the epigastrium, to diminish oppression and distress; and applied to the mastoid apophyses in relieving the congestion of the brain.

Baths which M. C. proscribes in the stage of asphyxia, in this he considers of great utility; also cold affusions to the head. When the face is flushed, vinegar and water, or a bladder of cold water, should be applied to the forehead, and cataplasms to the extremities.

Hiccough and obstinate vomiting M. C. does not think alarming symptoms; they yield sooner or later to proper treatment. He recommends ice, or cold water to be held in the mouth, ice to be applied to the epigastrium, the ammoniacal ointment to the same region, or rather baths and leeches.

The epigastric distress, the feeling of a load at the scrobiculis cordis, should be treated by the same remedies, and by a blister to the back, by sedative frictions upon the painful parts, &c.

> "Too often, however, we cannot preserve life; the exhausted system reacts incompletely; or indeed the reäction determines the inflammation to different points, which can bring on death, either in the acute or chronic stage; hence the necessity of using internal stimulants and emetics with the greatest caution. At other times the patient dies in the stupor, and in the typhoid stage; and more than one practitioner has repented of having used opium in too strong a dose during the period of asphyxia. We should never forget that the system, insensible to the most energetic therapeutic means, when a considerable disorder exists, is to the greatest degree influenced by them, when symptoms of reäction are manifested."

During convalescence, the strictest attention should be paid to the diet; many convalescents have become victims to neglect of this. It is impossible here to enter into the consideration of the diet suitable to all cases. It should be kept in mind that cholera is an irritation of the gastro-intestinal canal, and the diet should be that best suited to similar cases; that is, of the lightest and most easily digestible kind, and taken in small quantities at a time.

BIBLIOGRAPHICAL NOTICES.

XIV. *The Substance of the Official Medical Reports upon the Epidemic called Cholera, which prevailed among the poor at Dantzick, between the end of May and the first part of September,* 1831, *as transmitted to their Lordships, (of the Privy Council,) being an Analysis of the said Epidemic Disease in that City, founded upon actual Observation and accurate Inquiry, &c.* By JOHN HAMETT, M. D. London, 1832. pp. 189.

This book, as appears from its title, contains the substance of the reports on epidemic cholera, as it prevailed in Dantzick, transmitted to the Lords of the Privy Council, by Dr. Hamett, R. N. &c. who was commissioned by his government to proceed to that city for the purpose of investigating this disease. The manner in which Dr. H. has executed his commission, shows that he was fully competent to the task. Already conversant with cholera in India, he repaired to Dantzick, and examined into the origin and progress of the epidemic in that city with the most careful assiduity; and he has recorded his researches on these points with a minuteness proportionate to the importance of the question which they illustrate. He has also so authenticated his statements, as hardly to admit a doubt of their correctness, even in their unessential details. His investigations demonstrate pretty clearly that cholera did not originate in Dantzick from any imported contagion; or in other and more general language, they tend to show the uncommunicable nature of the disease. Their Lordships, however, had previously come to a different decision on this point. The reports of Dr. H. were nevertheless ordered to be printed, as is the custom; but by a vexatious and unjust course towards him, they were attempted to be passed by *sub silentio,* till the author obtained permission to print them at his own expense. Though the world has had an abundance of publications on this subject, we think the present one should procure for the author the thanks of the medical profession and of the community generally; for he has contributed to the mass of *well authenticated facts,* which are finally to settle what has now, however, almost ceased to be a question, viz. the contagiousness or non-contagiousness of epidemic cholera. And the reports are chiefly interesting, as they illustrate this part of the subject, though the symptoms, treatment, and pathology of the disease have not been neglected.

The interest respecting cholera has now so greatly abated that our notice of the work before us will be much more brief than its importance would have formerly required. Our extracts too, will be limited to such as will show the general bearing of the facts recorded in the reports; for we believe no person who wishes to investigate honestly for himself, the subject of the propagation of epidemic cholera, will be satisfied with any abridgment of facts, however well made.

Dr. Hamett first describes, with considerable minuteness, the medical topography of Dantzick, which he has rendered more clear by subjoining a plan of the city. Then follows ‘a brief account of the climate of Dantzick, including certain deviations in the seasons and physical occurrences previous to the appearances of the epidemic, drawn up from authentic documents;' with a table of the winds and changes indicated by the thermometer, barometer, and hygrometer for the preceding six years. For the interesting details on this subject, we must refer the reader to the book itself.

In Chapter III. p. 14, we have a 'circumstantial report of the first appearance and subsequent irregular spread of cholera at Dantzick;' prefaced with the following observations:—

> "It remains a problem to this day, in what manner the cholera morbus originated in and about Dantzick: certainly it is not proved to have been brought hither from Russia or Poland by men or merchandise; because no ship had arrived at Dantzick from any Russian port previously to its appearance, and the intercourse with Poland had ceased since the beginning of the winter. The first symptoms of cholera showed themselves indeed in such a peculiar manner as to exclude even the suspicion of its importation; and it is reasonable to conclude, that the disease originated here in some manner that has as yet not been explained."

To the same effect is the statement of Mr. Gibsone, the very intelligent British Consul at Dantzick, who powerfully aided Dr. Hamett in his investigations, viz. that—

> "It," the epidemic cholera, "appeared at a time when it was not known to be within a hundred miles of the place, and without there being the slightest trace of communication with any foreign means of infection." "It must, therefore, have originated in the place, as has indeed been pretty clearly proved."

We commend the following fact to the few who still believe in the efficacy of cordons and quarantines to bar out cholera.

> "It is well known that a military cordon had been placed for a considerable time before, along the whole line of the Prussian frontier, next Poland, with a view to keep out the disease prevailing there."

It appears that there were 'isolated or sporadic cases of cholera' previously to the 27th of May, 1831, when the 'two first acknowledged cases of *epidemic* cholera occurred in the harbor canal, one German mile from Dantzick, in two mud-barges;' the two next on the 28th, besides a suspicious case.

> 'On accurate inquiry however, two or three cases of the malady appeared to have occurred in the town of Dantzick on the 28th in two quite different parts.' 'On the 30th, it appeared not only in the town, but also in the suburb Schlapke; thus at *the same time in two quite different parts of Dantzick.*' 'It continued to spread irregularly, without any marked order from personal contact or proximity, in low, damp and dirty, or close and offensive situations, all over the city, among the destitute and poor, who are here in general ill clothed, ill fed, uncleanly in their persons and dwellings; never wearing flannel next the skin; subsisting chiefly on indigestible and unwholesome food, and in the habit of using pernicious drinks:—habitual drunkards, of whatever class, have been almost invariably the victims of this malady.'

From the commencement of the epidemic, May 27th, to September 8th, the whole mortality, according to official reports, was 1,028 in a population of near 72,000, residing in Dantzick and its immediate vicinity. Of 1,387 persons reported to have been attacked with cholera up to 31st August, inclusive, 1,010 died, and 367 recovered. While the epidemic was at its stadium of intensity, 1,991 inhabitants of the dwellings of cholera patients were shut up in these dwellings, 'exposed to contagion, did such an agency exist,' and subject to the bad effects of fear, want of exercise and fresh air, though indeed having the essential advantage of being *well fed!* What a commentary is this on the doctrine of contagion! But "few cases took place even among this immense number thus shut up, than abroad among a much less number of the same classes entirely apart from cholera patients and their dwellings!" Our limits forbid our giving the minute details by which this conclusion is shown to be correct, together with several interesting facts and circumstances relating to the rise and spread of the disease. We make room, however, for the following extracts of the first four reported cases of the disease in an epidemic form, 'which occurred without the medium of personal proximity or contact with the disease,' and which all proved fatal.

"Case I. Seventeen persons who lived in the same house, remained well."

"Case II. In the same chamber with him, which is only about ten feet square, were his wife and seven children; in an adjoining chamber two other persons, all of whom remained well."

"Case III. His wife with four lodgers in the same house, and sixty-four persons in all, who came in the closest contact with him, kept well; while one man who fetched a loaf of bread from the mud-barge, and the master of a ship which lay close to it, took sick of the cholera."

"Case IV. His wife and a daughter, three years old, lay the night with him in the same bed; close by lay a boy, three years old, and in a corner of the chamber his mother-in-law. The chamber is thirteen feet long, ten feet broad, and six and a quarter high, with one window of three feet, whereof the upper and under rows of panes were closed with boards. Besides these persons, fourteen more lived in the same house, and all of them continued in good health."

The occurrence of sporadic cases of cholera in Dantzick previously to its bursting forth in an epidemic form, and its appearance in this form at a great distance from any existing focus of the disease, and without any communication—important facts in reference to its communicable nature—accord very closely with what has been observed elsewhere. Sporadic cases occurred in Paris many weeks previously to its epidemic appearance. Sometime in the winter of '31–2, a fatal case of a medical student, we believe, came under the care of Andral, who pronounced it Asiatic cholera. As in Dantzick, so in Paris, the malady commenced epidemically at nearly the same time in remote parts of the city—in the quarter of the Hotel de Ville, and of Gros Caillon.

Our author next considers in successive chapters, the symptoms, pathology, and treatment. In the symptomatology of cholera, little that is new can be expected at the present day. And as regards the pathological remarks, it is no dispraise to say, that the earlier observer cannot be expected to furnish any additional information on a subject of pathology more recently investigated by Andral, Louis, and Bouillaud. Without questioning the correctness of the pathological details in the work before us, we will barely mention some discrepancies from our own observations made in upwards of seventy autopsies. This is not done on account of any importance attributed to the particular state of these organs in cholera, but for a reason exactly the reverse, viz. to show that no apparent lesions of them are essential to the production of the symptoms of this disease. We advert to the "engorgement of the liver and spleen"—'the great moisture of the serous cavities of the chest'—the softness of the brain. We have found the liver and spleen natural, and often deficient of blood, particularly the latter organ; the pleura very generally *dry;* the brain in a few rare cases in a state of *ramollissement,* with effusion beneath the arachnoid membrane; but in most cases the substance of the brain has had at least its ordinary firmness of texture. We *always* find in the alimentary canal evidences of inordinate action, but how produced, we have not been able to satisfy ourselves.

Our limits permits us to advert to only a single remark under the head of ‘preventive means and treatment.’ “*Fruit,* still more that which is unripe,” is enumerated among the causes that ‘tend to produce the disease.’ In the prohibition of *unripe* fruit, we entirely accord; but from the sweeping condemnation of fruit and vegetables generally, and the substitution of a diet consisting chiefly of meat, as has been advised by all health councils, and by many members of the profession, not however by our author, we must express a most decided dissent. We know nothing more *salutary* or grateful to the stomach during the existence of epidemic cholera, than good, fresh, ripe fruits in moderate quantities daily; nor is there any diet more *wholesome* at such a period, than one consisting in a good proportion of the various garden vegetables *well cooked.* This opinion has been formed from most ample personal experience, and that of very many who adopted our advice, for months in the largest city of the continent during the most awful ravages of the cholera; and it has been subsequently confirmed by the same manner of life during a month spent in New York city while the cholera prevailed there. Were it permitted to use an argument in the nature of a final cause, we would say—the great predisposing cause of cholera is digestive derangement, or bowel complaints. Now Providence has not erred so egregiously as to furnish fruits most abundantly in that season, when from atmospheric causes these complaints are most frequent; and especially in those regions where such complaints are endemic.

Our author's observations on treatment are judicious, and we recommend them, together with his remarks on “preventive means,” and the advice contained in the concluding paragraphs of his work, to the perusal of those who have this disease to manage, or who reside in an infected region. His general treatment consists in the employment of venesection in the robust and young at the commencement of the disease, and sometimes to moderate reäction. He gives mercurials, repeated at intervals, in combination with stimulants, tonics, antispasmodics, antimonials, or mild stomachic purgatives, according to the existing indications.

The remaining chapters, forming by the way rather more than half the volume, are occupied mainly with the “question of the contagion of cholera.” In these new facts and testimonies are introduced; others previously mentioned are presented again, and the question is argued. The author has added tables of the names of 841 individuals—the persons attacked with cholera in Dantzick and its vicinity, from the 28th of May to the 23d of July, comprising many interesting facts and circumstances relating to the epidemic. The attention bestowed on this branch of the subject will not be deemed disproportionately great when we reflect that next, and scarcely subordinate in importance to the treatment of spasmodic cholera, is the question of its contagiousness or communicability. If cholera be communicable to persons in health from the sick, their clothes, beds, &c. to act on a contrary opinion would be productive of ill consequences, too obvious to require pointing out. And on the other hand, if this disease be not communicable, to act as if it were, is by no means the *safe error* which some fancy. Great personal inconvenience, great pecuniary losses, great sacrifices of comfort, health, and life, are among the consequences flowing from this *safe error*. The ordinary intercourse and business between different countries and different sections of the same country, are interrupted; persons are subjected to painful and often *unhealthy* quarantines; the well are not permitted to leave an infected district; the fears of the community, one of the most powerful predisposing causes to the disease, are greatly aggravated; and many an unhappy victim, whom careful nursing might have saved, is abandoned to his fate. And what have we in return for all these inconveniences and misery? A few of the profession live on the errors they propagate, and fatten on the fear of mankind, which they labour to augment.

In consequence of some looseness in the use of the terms *contagious* and *infectious*, several writers have employed the term *communicable*. There are however reasons for preferring the former terms if strictly defined. A disease is *contagious*—that is, communicable to a person in health from a person labouring under it, by coming in contact with the latter, by breathing the air about him, or by touching the clothes, bed, or other things which may have been impregnated with effluvia or matter from him living or from his dead body. A disease is *infectious*, and a region or atmosphere is *infected*, where the disease essentially depends for its origin and diffusion on some electrical, vitiated, or other unknown state of the atmosphere; or on some emanation from the earth; or other local cause not necessarily connected with the presence of persons labouring under the given disease. As to what is denominated *contingent contagion*, we believe it will always be found to mean no more than that increased liability to be acted on by morbific causes, which arises from depression on beholding the sick, and respiring the air of their ill-ventilated apartments; and that this liability is no greater than that produced by a similar depression of the mental and vital powers from any other causes than the presence of persons sick of the given disease.

That spasmodic cholera is not contagious in the foregoing sense of this term, has been fully demonstrated we believe by the careful observation of a sufficient number of facts. Loose and general statements of its propagation by contagion we have indeed in profusion, but they consist for the most part of facts negligently observed or incorrectly reported. The truth of this remark will be obvious to any one who will compare the gossip and rumours respecting the spread of cholera in the north of Europe, collected by M. Moreau de Jonnès of Paris, in his book on Contagious Cholera, with the succinct details of Sandras, who investigated many of the facts on the spots where they are alleged to have occurred.

In proof that this disease was not contagious at Dantzick, we shall quote from the remaining chapters only a very few facts in addition to those already cited or alluded to, referring to the detailed accounts of the author such persons as are desirous of investigating the subject. Our author adduces the written opinions of seven of the chief practitioners in Dantzick in favour of non-contagion. Dr. Baum, Physician General of the Town Hospital in Dantzick, says, that of the twenty-five physicians in that city, '*five* are *for* and *twenty* *against* contagion.' Had they decided in favour of contagion, they would have been entitled to double fees, which were refused them on account of their holding the contrary opinion. Dr. Baum also states, "it did not spare institutions which were perfectly shut against any communication with the town." Dr. Hamett mentions the cases of Drs. Baum, Dann, of himself and others, in proof that the disease is not necessarily produced by the inoculation of matter from a recent subject. To the same point, the writer of this article might add, that it occurred to himself to be wounded, and to see those associated with him, often meet with the same accident, while making autopsic examinations in cholera, and without even the suspicion of any ill consequence. It is also stated, that subsequently the cholera cases were placed in the same wards with other patients, and "yet no bad effects ensued." We have witnessed a similar promiscuous arrangement of cholera and other patients in the same wards for a long time, and on an extensive scale, and with no unfavourable consequences. But it is not our object on the present occasion to adduce new facts to prove or illustrate the non-contagiousness of cholera.

Though the doctrine of non-contagion rests wholly on the accurate observation of facts, it would be highly interesting did our limits permit us to do so, to point out the striking failure of analogies between cholera and diseases known to be contagious. The concluding chapter embraces a consideration of the subject under this and other important points of view, from which the author deduces the following inferences.

> "I. That it, (epidemic cholera,) is spontaneously produced in certain weak constitutions, and disordered habits of body, in consequence of some indeterminate combination of certain atmospheric and local states, and occasionally in consequence of different powers of electricity in the air, on such constitutions and marked habits, as may reasonably be inferred from the progress of the disease in certain electrical states of the weather."
>
> "II. That cholera spreads epidemically, but irregularly, still in accordance with marked personal and local states more than any other epidemic."
>
> "III. That *general infection*, in the sense I use it, is produced only by an unfavourable or malignant state of the atmosphere in certain localities promoting such a state; and *special infection* by the air being rendered still more deleterious on being pent up, and further vitiated by the *effluvia* of dirt or liquid filth, or on being contaminated with the foul air and *effluvia* of several person, whether affected or not, in close places."
>
> "The very nature indeed of the disease seems to indicate that it is not necessarily propagated by merchandize. Independently, however, of which, there has never been any evidence whatever in Dantzick of its being so propagated; while all the authentic facts which I have enumerated on this head in that particular quarter, declare strongly against contagion in this way; to which I could add, as formerly stated, some others of a private nature, also strikingly against it." "In conclusion—
>
> "It necessarily follows, from all the facts which I have adduced, that epidemic cholera cannot be possibly averted by all the combined mechanical restrictions of man. Indeed, the most accurate inquiries have hitherto ascertained that it rises spontaneously, and spreads capriciously and widely, still in conformity with its own determinate laws, in despite of every precautionary restriction; so that we might as well attempt to wall in the birds of the air."

On the subject of cordons, we cannot refrain from quoting for their obvious and practical good sense, the following remarks in a communication from Mr. Gibsone to Dr. Hamett.

"Were the expenses occasioned by these restrictive measures, applied to establish good hospitals, and to provide the needy with a sufficiency of wholesome food; and were proper means used to convince people that they can best secure themselves against the baneful effects of the sickness by carefully avoiding the causes of it, and by promptly meeting its attacks with proper remedies, and with fortitude and equability of mind, it might confidently be expected that its ravages would be greatly diminished."

For if cholera be under any circumstance contagious, its contagion is of so subtle a nature, that all attempts to prevent its diffusion by sanatory cordons, have hitherto signally failed. We cannot conclude this notice of Dr. Hamett's reports, without again warmly recommending them to all who wish to study the progress of epidemic cholera. We have here presented to us the facts and circumstances connected with its origin and existence in Dantzick, most carefully and diligently sought out, and investigated with ability, and in a spirit of honest inquiry after truth. A. S.

XV. *An Essay on Epidemics as they appeared in Duchess county, from* 1809 *to* 1825; *also a Paper on Diseases of the Jaw Bones, with an Appendix, containing an Account of the Epidemic Cholera, as it appeared in* 1832. By HUNTER SHERRILL, M. D. New York, 1832. pp. 184 & 38. 8vo.

In the existing state of medical science, few subjects are so important or interesting, as the history of the character and progress of epidemics. Modern anatomy has thrown its light upon the intimate structure and distribution of every tissue which enters into the composition of the human frame; something is still to be learned, but we are rapidly verging toward the boundaries which our finite powers prescribe to the investigation of the mechanical structure of this machine. Physiology, as an experimental science, has been cultivated to a great extent, within a few years, and although we occasionally witness the promulgation of vague or ill-founded theories, for the most part resulting from a culpable neglect of the operation of mechanical and chemical laws upon living organs, most of the healthy vital functions are now explained upon principles truly philosophical.

But pathology is still in its infancy. The grand fundamental principle that *all fevers and most other diseases which flesh is heir to, are primarily produced by local irritations*, may, it is true, be now regarded as established. The language of medicine is changed, and our ideas are rendered more precise, in a corresponding degree. We scarcely hear the word *idiopathic*, employed in speaking of disease; even debility and excitement are considered, for the most part, as local and reciprocal excitement in one part, being necessarily productive of debility in some other, and the whole amount of excitability in the system remaining constant. General debility is an antiquated term; even in the collapse of cholera asphyxia, we are taught to seek for irritation and active inflammation of the intestinal canal.

It is by the close observation of the effect of local situations, habits, and climate, in modifying the character of epidemic diseases, that we are enabled to discover what is due to general and what to minor causes. Every contribution made to medical topography is therefore a treasure laid up for the benefit of posterity, although it may not prove immediately interesting. Even a dry and barren account of the dates of the appearance and cessation of each disease, at any particular spot, is not without its value, for from the gradual accumulation of such facts, important inferences may be drawn. With the progress of great epidemics in large cities, the profession is made generally acquainted, but much of the ill feeling produced by the discussion of moot points in medical and medico-legal science, would be prevented if there existed the same facility in acquiring intelligence from the country. The domestic origin of many diseases supposed to be imported, would then be proved beyond dispute, and the vexatious quarantines that so often produce the evil against which they are intended to guard, would soon be abandoned.

It is to country and district medical societies that we must appeal for information so highly desirable, and the little volume before us originates from such a source. The incongruity of the subjects announced on the title page is rather apparent than real, for the "diseases of the jaw bone" which are described in a paper intermediate between the essays on the epidemics of Duchess county, from 1809 to 1825, and that on the cholera as it appeared at Poughkeepsie in 1832, are analogous to *the cancrum oris* of Pearson, *the gangrenous ulcer of the mouths of children,* described by Dr. B. H. Coates, in N. A. Med. and Surg. Journ. Vol. II. p. 1. &c. which affections are sequelæ of certain forms of fever, and have direct relation to the peculiar features of epidemics.

Dr. Sherrill's work contains a series of addresses delivered at different times before the medical society of Duchess county, New York. The first bears date 1819, and is a retrospective review of the prevalent diseases of the preceding ten years. From 1809 to 1811 inclusive, the county was subject to the usual routine of intermittents, mild in the spring, becoming more severe, and mingling with remittents as the season advanced, until in the autumn, bilious remittents of a very grave character appeared, and in some districts prevailed to an alarming extent, and with such violence that the Hyde Park fever became proverbial in the surrounding country. The winters were generally healthy, although occasional cases of catarrh, pneumonia, enteritis and croup, &c. occurred. In the fall of 1811 this order of things disappeared, and the high bilious remittents of the autumnal months have not since been prevalent.

The close of this and the commencement of the succeeding year, were remarkably healthy, there being but little disease, except a singular cutaneous eruption which was known by the popular name of the *merino itch,* the nature of which cannot be ascertained from the imperfect notice furnished. This eruption proved very obstinate, and required for its cure, the internal and external employment of mercurials. "May not this disease have been," asks Dr. Sherrill, "a precursor of one of more violence which followed it—the winter epidemic?"

In February, cases of a novel character began to occur, and not unfrequently terminated fatally in an unexpected manner. These cases were the heralds of the epidemic then known by the title of spotted fever, which soon became general throughout the county, and proved terribly fatal in many places. An accurate list of the deaths by this disease in the town or township of Stanford was preserved by Rev. L. Birch, and the results was as follows:—January, 4; February, 6; March, 18; April, 24; May, 11; June, 2.—Total 63. Extent of the town fifty square miles; population 2350; rate of mortality 1 to 37.3. The numerous and detailed accounts of the progress of this epidemic which are before the profession, render it unnecessary to describe the symptoms as given by Dr. Sherrill; suffice it to say that the number of cases of sudden collapse, and excessive engorgement of the lungs, was less numerous in Duchess county, than in many other situations, and the epidemic appears to have been more strongly influenced by the local diseases, generally prevalent in that district, so that bilious symptoms and a remittent disposition were more frequently encountered.

Dr. S. very early adopted the employment of venesection and the free use of purgatives, notwithstanding the current of popular opinion which set strongly in favour of a stimulant course: a corresponding improvement in the success of his treatment was the result.

> "The blood was usually of a dark appearance, *showing signs of not being properly oxydated,* and at the first, bleeding did not always show the sizy coat, when it afterwards did. *It often had the colour and consistence of molasses.*" p. 40.

This epidemic continued through the years 1812 and 1813. In 1814, it gave place to the remittent fever complicated with dysentery, which displayed itself at first among the militia stationed at Harlem, and Brooklyn, and was hence termed the Harlem fever—it was chiefly confined to the soldiers and their attendants.

From this period to 1819, there was no general epidemic. The autumnal remittents began gradually to reäppear, and the diseases of other seasons assumed by degrees the form of "simple phlegmasial excitement." The year 1819 opened with many cases of disease of the throat and fauces, producing general soreness of the throat and difficulty in deglutition. There was swelling of the mucous coat of the œsophagus, producing in some, the idea of the presence of a foreign body. When the inflammatory symptoms subsided, there remained a debility of the glottis producing hoarseness and difficulty of speech. Most of the inflammatory affections occurring at this period, were attended with strong determination to the brain, pain, stupor and sometimes delirium. This affection was followed in several districts by scarlet fever, or cynanche maligna, but it was generally of a very mild character. It was during the summer of this year that the yellow fever reäppeared at New York, but although the bilious autumnal fevers of Duchess county were rather more protracted than usual, they did not become widely prevalent.

The second paper of Dr. S. is an address delivered to the same society in November, 1825, and relates to the diseases of the county from 1819, to that date. An unusually healthy winter ushered in the year 1820, but the summer produced a severe epidemic dysentery, sporadic cases of which occurred in several succeeding seasons, but it did not become general again until 1825. During the intervening period, the vernal intermittents and the autumnal remittents were frequently encountered; but they differed from those which prevailed prior to "the winter epidemic," in exhibiting no prominent external symptoms of *bilious affection,* either on the skin or the tongue. Torpor of the surface was often observed. In 1825 a much stronger tendency to the typhoid condition was obvious, and numerous cases of regular typhus fever occurred, attended in some cases by a hæmorrhagic disposition. Blood drawn at the commencement, was dark and heavy, and very thick. Dr. S. appears not to be deterred from active depletion by signs of apparent debility. The latter part of this paper contains some speculations on the variola and varioloid which prevailed in Duchess county in 1823, and again in 1825, and some notice of other diseases of more strictly local character; it concludes with some remarks upon puerperal fever, with abstracts of three successful cases.

Next follows an essay on the caries of the jaws of children, prevalent in the New York Alms-house, read before the Medico-Chirurgical society of the University of New York, in 1808; to which is appended a letter on the same subject from Professor Francis, dated December 13th 1825, and the description of the disease as it prevailed in the Children's Asylum, extracted from the paper of Dr. B. H. Coates, to which reference has been made.

The original paper of Dr. S. is the earliest public notice of this formidable disease in America, with which we have met. It contains several interesting cases. The author gives strong testimony in favour of the local application of a solution of sulphate of copper, the remedy so successful in the practice of Drs. Vanmeter, Beasley, and Coates, and in this he is joined by Dr. Francis; but we regret that he has recommended a weak solution in the commencement of the disease. Having had to contend with the affection in many cases, for it prevails at times in all marshy districts as a sequelæ of intermittent and remittent fevers, we feel bound to insist on the high importance of employing a saturated solution in every case. Success is never secure unless the wash is applied to the whole diseased surface, and therefore not only every diseased tooth, but also any portion of the jaw to which the necrosis may have extended, should be removed if possible. One of the principal reasons of our frequent failure when the mortification has extended to the cheek, is the difficulty of reaching the living parts concealed beneath the sloughs; under these circumstances the plan recommended by Marjolin in the Dictionnaire de Medicine, *Art. Gangrene de la Bouche des Infans*, that of cutting away the greater part of the sloughs, should be employed. By completely impregnating the remainder with the solution, using externally the saturnine poultice, as applied in the case under the charge of Dr. R. M. Huston, quoted by Dr. Coates, which case we saw during its progress, the life of the patient may be saved under circumstances apparently desperate.

The most extensive destruction of parts which we have seen described in a case terminating favourably, is communicated to Dr. Sherrill, by Dr. Beers, of Clinton, (p. 114.) In this patient, a girl aged eleven years, the necrosis involved the whole right side of the upper jaw, extending to the molar bone, and the disease ultimately affected the lower jaw. The cheek became gangrenous, and ulceration extended through its whole thickness, from the angle of the mouth nearly to the ear. She lost ten teeth.

> "When the gangrenous tendency of the system was discovered, the patient was treated with vigorous antiseptic and stimulant remedies. The debility and prostration, a part of the time, were so great as to require the most liberal use of these remedies. The strength was supported, and the diseased portions of the bone were separated from the sound. The space was filled with a new growth of parts, after a long and tedious process. The wound closed up, and the patient recovered, and is still enjoying tolerable health." p. 115.

At the request of Dr. D. F. Condie, several years ago, we removed from a lad in this city, that portion of the upper jaw which intervenes between the third molar tooth on the right, and the second on the left side, together with the palatine plates, and the nasal processes complete, it being in a state of necrosis, and the periosteum apparently destroyed. The patient was supposed to have laboured under the complaint in question, but if so, the powers of nature, aided perhaps by the unprofessional advice of friends, had arrested the gangrenous tendency before medical aid was called; very little deformity resulted. We have since removed several large portions both of the upper, and the alveolar process of the lower jaw, in the same complaint, and whenever it has been possible to apply the saturated solution of the sulphate of copper to the living parts over the whole diseased surface, the disease has been arrested.

After a supplementary note on an epidemic, or rather endemic dysentery in 1826, Dr. S. gives us a short essay on the epidemic cholera as it appeared in Poughkeepsie in 1832. We regret that he has omitted all notice of the terrible influenza, and the singular and complicated cutaneous affections which preceded its appearance. There is little novelty in this essay, for so much has been written on the subject, by the disciples of all schools, that it is not difficult to predict the opinions which will be formed by any individual when he becomes acquainted with this epidemic, if we are informed under what banners he is enlisted. Dr. S. is evidently of the school of Rush; with the exception of the occasional use of the term gastro-enteritis, he gives us no evidence of adhesion to more recent doctrines. He considers cholera asphyxia as an inflammatory affection, bearing more resemblance to pneumonia typhoides than to any other disease well known in this country. He regards the morbific poison as acting on *the whole system*, and believes that there exists inflammatory action throughout the intestinal canal, with excessive engorgement, both of the thorax and abdomen, which he regards as a highly inflammatory symptom, for he draws no distinction between congestion and inflammation. The term irritation, in the sense in which it is now employed by the physiological school, does not occur in the work. This is to be regretted—the language of science should be universal. In addition to external warmth and sudorifics, Dr. S. strongly advocates the propriety of frequent and small bleedings and free catharsis. Among the purgatives, a combination of rhubarb and sulphate of magnesia was preferred, and calomel was employed but seldom. The author speaks flatteringly of his success, but has furnished but few details.

It would be impossible for us, within the limits of this notice, to discuss our opinions of the proper treatment of cholera, but we should be very culpable in not expressing a strong difference of sentiment upon one point. "During the premonitory stage," says the author, "a brisk cathartic or an emetic, followed by opiates and astringents, would frequently carry off the approaching disease." We have seen such frequent ill-consequences, and sometimes such terrible evils from the use of active cathartics in the earlier stages of cholera, or during the premonitory diarrhœa, that we must express our disapprobation of their employment. It is within the recollection of perhaps every practitioner, largely engaged in treating this disease in or near Philadelphia, that many cases were actually produced by doses of purgative medicine which at another period would have proved harmless. The irritability of the intestines is such that we have been compelled to use caution in treating other complaints, to avoid excessive exhaustion from hypercatharsis.

In taking leave of Dr. Sherrill's work, justice demands that we should complain of an occasional want of precision in terms, and a neglect of grammatical accuracy. These papers were delivered at very different periods, and some of them, which have been before presented to the public, are now reprinted with additions, and it would be unjust to expect perfect uniformity of manner under such circumstances; but when facts are of sufficient importance to warrant publication, they deserve to be carefully observed and clearly stated. What is meant by bilious affection, or head affection, enumerated in several places among the symptoms of particular fevers, and attended by no explanation? Some of the numerous mistakes in grammar, and even in the arrangement of phrases, may be chargeable upon the printer, but it is dangerous for an author to be so careless in the correction of the press.

The state of New York deserves high praise for the system of county medical societies which she has instituted, but the profession has some reason to complain that so little intelligence has yet emanated from this source. Why are not regular records of the progress of epidemics, accompanied by meteorological observations, so seldom preserved by these societies? It is a disgrace to the great state of Pennsylvania that she has been still more tardy in the march of improvement. R. C.

XVI. *The Anatomy and Physiology of the Organ of Hearing, &c.* By David Tod, Member of the Royal College of Surgeons. Octavo. pp. 147. London, 1832.

The attention of medical writers has latterly been bestowed more upon an improvement in the treatment of cases of diseased hearing, than upon that of the anatomy of the parts concerned. Most of the anatomical observations of the present time are therefore a mere repetition of what has been so well said by preceding writers, and especially by the late celebrated Scarpa, in his Disquisitiones de Auditu et Olfacto. It is a subject of sincere regret that this apparent perfection of anatomical knowledge on the ear, and the extreme difficulty there is in adding any thing of value to it, should not have been followed by equally improved processes of treatment; it is however a melancholy fact, that very many, perhaps one-half of the derangements and imperfections of the sense of hearing, derive little or no benefit from medical attendance, and that some of them are even rendered worse, by hazardous and experimental modes of treatment.

The work announced in the caption of this article has the novelty of a very large addition to the ordinary list of muscles of the ear; and also some other new descriptions, as well as a considerable amplitude of physiological discussion in explaining the functions of different parts of the organ. It is upon the whole somewhat elaborate in its composition, and creditable to the ingenuity of its author.

The reader will perhaps be glad first of all to learn its anatomical novelties, which are as follow. Two muscles to the external ear, of which Mr. Tod calls one the obliquus auris, and which is placed on the dorsum of the concha, and another called by him contractor meatus or tragico helicus from the attachments implied in this name. The remaining muscles are found in the tympanum.

"1. *Anterior Mallei*[*] arises by a very small beginning from the extremity of the spinous process of the os sphenoidale, and from thence runs backwards, outwards and upwards, along the outer surface of the Eustachian tube, and through the fissura glaseri and canalis anterior, from the surface of which it receives many fibres, and is

"Inserted into the whole length of the processus gracilis, and anterior surface of the head of the malleus, where there is a small eminence near its cervix.

"2. *Posterior mallei* arises broad, thin and fleshy, from the sulcus semilunaris and parts above it near the groove of the os annulare, and from thence passes forwards and inwards, and is

"Inserted into the posterior surface of the manubrium mallei below its processus brevis.

"3. *Internus manubrii mallei* arises by a very small beginning from the posterior cartilaginous extremity of the Eustachian tube, and broad and fleshy from the sinus muscularis. The fleshy fibres from these origins terminate in a slender round tendon, which runs directly outwards from the sharp osseous ridge at the termination of the anterior extremity of the processus fallopii, and is

"Inserted into the inner surface of the manubrium mallei behind but a little below its processus brevis.

"4. *Anterior capitis mallei* arises from that part of the outer surface of the fossa navicularis just before the head of the malleus, and from thence runs obliquely backwards and inwards about the twelfth part of an inch, and is

"Inserted into the depression in the anterior surface of the head of the malleus.

"5. *Superior capitis mallei*[†] arises fleshy from that part of the superior surface of the fossa navicularis just above the head of the malleus, where it is articulated with the body of the incus, and from thence descends, and is

"Inserted tendinous into the superior and inner part of the head of the malleus, close to the margin of the articulating surface.

"6. *Obliquus incudis externus posterior* arises fleshy from the external surface of the fossa navicularis just before the beginning of the mastoid cells, and from thence descends obliquely forwards and inwards, and is

"Inserted into the middle of the superior surface of the processus brevis incudis.

"7. *Triangularis incudis*[‡] arises broad and thin from a part of the sulcus semilunaris on the inner side of the posterior mallei, and from the root, and sometimes from the whole length of the posterior surface of the manubrium mallei. From these origins the fleshy fibres run in a converging manner, the posterior obliquely forwards and inwards, the superior obliquely downwards and inwards, and the anterior obliquely downwards, backwards and inwards; and the whole are

"Inserted broad and thin into almost the whole length of the outer surface of the processus longus incudis, and the anterior surface of the cervix of the stapes.

"8. *Stapedius posterior* olim *stapedius* arises fleshy from the sulcus stapedius, and from thence passes forwards, and a little upwards and outwards, in the form of a pyramid, and is

"Inserted tendinous into the depression in the posterior surface of the cervix of the stapes, and membranous into the posterior surface of the button-like process of the incus, and a small portion of its long process.

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[*] "I have named the muscles more from their situations than their apparent actions. The names already in use are very objectionable, particularly the laxators and tensors; for the membrana tympani is always kept tense, after the os annulare becomes amalgamated with the entire bone, by the action of its own muscular fibres, which are more powerful than the combined strength of all those belonging to the cavitas tympani."

[†] "This muscle is described by Sœmmering as a ligament. He calls it ligamentum proprium teres."—*Sœmmering, Icones Organi Auditus Humani, tab. ii. fig.* 20.

[‡] "This muscle is noticed by a Dr. W. Holder in the year 1668. Vide Philosophical Transactions, vol. iii. p. 666.

"9. *Musculus* or *Structura stapedius inferior.* This muscle, or structure, (for I have not as yet been able to discover muscular fibres in it sufficiently clear to warrant my calling them by that name, although it looks more like muscular texture than any other,) arises broad and thin from the middle of the outer surface of the eminentia pyramidalis, and from thence extends obliquely upwards and outwards in the form of a pyramid, and is

"Inserted into the under surface of the cervix and crura of the stapes.

"There is another structure apparently muscular extending from the external surface of the fossa navicularis directly opposite to the head of the malleus and body of the incus, and fixed to those parts of the bones."

The first, third, and eighth, the anatomist will recognise as old acquaintances, and are admitted as such by our author, they having been merely rechristened; from this, as well as from several other indications, Mr. Tod exhibits himself as an anabaptist, at least in anatomy, a feature in his work to which we have some objections presently to be explained. On the score of these supernumerary muscles, Mr. T. in a note to page 19, speaks of the certainty of finding them, in a tone of such assurance and good faith, that we can scarcely doubt the sincerity of his belief on the matter. Having looked patiently for those muscles, however, and under circumstances sufficiently favourable as we thought for detecting them, we are unfortunately compelled to withhold a concurrent testimony, at least until further inquiries have satisfied us. The ardour with which new observations are taken up, will however no doubt in a short time settle this point conclusively for or against Mr. T.; for the present we will therefore simply state, that after two dissections on fœtal ears conducted with care, we have not been able to find any thing more than what is generally known and admitted.

We here and there find remarks for which we were not prepared; for example, (p. 12,) that the passage from the tympanum into the cochlea is called scala tympani; that the dura mater forms a periosteum (internal) to the labyrinth, and a part of the membrane of the foramen ovale, and of the foramen rotundum, (p. 13, 68,)—that the dura mater is a serous membrane, (p. 74,)—that the pia mater lines the labyrinth of the ear, (p. 76.)

We also observe that our author has called one end of the promontory eminentia pyramidalis, instead of attaching that name to the process of bone containing the stapedius muscle. In the most of this category there is a striking departure from the best authorities, we think rather to the prejudice of the subject, and also to that of the author. The latter, as all other anatomists must know, that from the permanent and unvarying character of this science, the terms in use are generally derived from the highest and most classical writers, and that it is not usual to change them, or to introduce new ones, except in case of positively new discoveries. At least, if any one does so he finds his terms a mere provincialism or dialect of anatomy, known only to himself and the little circle of which he may be the centre. A remarkable instance of this sort of abortion in nomenclature must be present to his mind in the attempt made by Dr. Barclay of Edinburgh, to introduce an anatomical vocabulary new in many respects, the adoption of which we rather think never extended beyond his immediate pupils, and which was certainly never incorporated into the classical and authoritative productions of the science. It is not meant that all the old terms, and old applications of them, are the best that could be used, but only that there is no authority now existing in anatomy capable of changing them, and that it would probably be a fruitless task even if undertaken by the highest medical tribunal in the world, to wit, the school of medicine in Paris, with all its subsidies of public and private professors of anatomy. We would here just suggest, that the best general standard of Latin nomenclature, and its application to structures, is to be found in J. F. Meckel's Manual of Anatomy. This anatomist has himself, notwithstanding his own personal and hereditary reputation, been extremely sparing of innovations; and has shown much judgment in keeping his language from becoming a mere dialect, by resorting only to a phraseology which may be considered entirely classical and scientific in consequence of the very eminent sources from which he has derived it.

Mr. Tod, at the end of the chapter treating on the anatomy of the ear, gives the following directions for exhibiting the structure as he has described it.

> "*Directions how to expose the apparatus tympani without doing the textures much injury.*—Take the temporal bone of an infant or fœtus, and after injecting it, remove all the soft parts from its surface, keeping the membrana tympani entire; then introduce the point of a small scalpel between the os annulare and the petrous portion on the under surface, and separate the one gently from the other, so as to raise the two inferior thirds of the former about a quarter of an inch from the latter, and put a small piece of wood between them until the parts become quite dry. The different parts will then remain permanently *in situ*, only a little on the stretch. Again; take another temporal bone of the same age, and gradually remove the osseous shell which forms the upper part of the fossa navicularis and the inferior part of the cavitas tympani, and put the preparation aside to dry. Every texture will then appear *in situ*, and in a state of integrity. By repeating these dissections with slight alterations, every structure will be demonstrated in a variety of ways."

The second chapter treats on the physiology of the ear, and presents some experiments to show that the external ear is for the purpose of enabling animals to detect the accidental or local properties of sound. The speculations in this chapter are numerous and ingenious. We introduce an example.

> "Nothing can display the frugality of nature, or the mystery of her works, to greater perfection than the membrane of the fenestra ovalis,—a membrane which, when excited by the basis of the stapes, performs more important functions than any other part of similar dimensions in the body, and when diseased deprives us of a sense the most pleasing as well as the most useful in the animal œconomy. But for the known importance of its function, this little membrane would probably never have arrested the attention of the anatomist and physiologist for a moment. A very remarkable circumstance is, that the membrane of the fenestra ovalis, though performing peculiar functions, should be merely a portion of that one which covers every nerve in the body. In contemplating the animal machine, no part fills the mind with greater wonder than this membrane,—a structure extremely thin and semitransparent, occupying a small semilunar hole, the diameter of which does not exceed the eighth part of an inch, and yet possessing the power of concentrating all the effects which the innumerable sonorous properties produce in the apparatus of the tympanum, and of conveying them to the sensitive theatre of the ear;—the means are truly insignificant compared with the magnitude of the end. That we should be indebted to so flimsy a texture, moved in various ways and degrees by the base of the stapes, for all the pleasures arising from eloquence and music, is truly surprising. But the mysteries of nature surpass all comprehension. The more we dive into her secrets, the more do we become embarrassed and perplexed with the littleness of our understanding."

The author finds a difficulty in the observation of Scarpa, that the cavity of the tympanum in the fœtus is filled with a fluid to prevent audition; there is, however, a special check put upon the sense, not only by this mode, but also by the inferior semicircumference of the meatus externus, coming up in contact with the membrana tympani, so that rays of sound are kept from impinging directly on the latter, even for some time after birth.

The third chapter enters somewhat at large into an examination of the causes of congenital deafness; they are referred to two, principally scrofula and syphilis, destroying the texture of the labyrinth. We have just alluded to the idea of the author, of the labyrinth being lined by the dura mater and pia mater; he adopts this notion as a fundamental point for explaining congenital deafness, which he believes to depend frequently upon the morbid changes of these membranes. As all of this is in the region of speculative anatomy and pathology, it may be as well for us to keep out of it, for nothing can be less certain. He, however, furnishes a practical remark of value, which is, that in almost every case of congenital deafness he has found the membrana tympani so defective as to indicate its being the sole or main cause of the disease, (p. 82.) It would here have been interesting to us to have what the French call a numerical table, illustrating the foundation of this and other opinions.

Chapter IV. introduces us to the treatment; the favourite local remedies are ammonia and ether.

"Among the local stimulants of the first class, we are inclined to think that ammonia is by far the most important: for by the judicious administration of this agent, we can often not only excite the actions of the vascular system belonging to the locomotive machinery of the ear, but also of that of the labyrinth, to such an extent as to render the auditory apparatus capable of performing its functions very perfectly for a time. In the different cases in which we have tried this remedy, we have found, that combining it with the linimentum camphoræ, and applying it with a camel-hair pencil to the surface of the meatus externus, or the cavitas tympani, (when the membrane was absent,) was the safest and best mode of employing it. By this method we have the power of producing either a slight or a high degree of inflammation, and, of course, of suppuration; and, by occasional applications, of preserving the parts in either of these conditions as long as we may think necessary. When we produce suppuration, it should never, however, be to any great extent or degree; and during its continuance the parts should be frequently cleansed with tepid water: for in exciting this process, the only object we can have in view is, the production of a certain action in the nutritious vessels, so as to induce them to secrete, if possible, those textures which the functions of the primordium and embryo have been unable to develope; or to direct the powers of life to the faulty phænomenon, in such a manner as to cause the existing structures to act agreeably to the ordinary intentions of nature. In every degree and stage of inflammation which it may be deemed adviseable to excite, one or two ounces of tepid water should be injected every day into the meatus externus; for by this means we both soothe the inflamed surfaces, and also remove from them all dead and irritating matter, and thereby keep up that kind of action which appears most likely to produce the effect desired."

"With respect to the second remedy of a local nature which we have mentioned, viz. æther, we may observe, that it is in importance next to ammonia; and although it has been more frequently employed in the treatment of occasional deafness than in congenital cases, it is nevertheless often capable of proving very beneficial in the latter. In every case in which I have given it a trial, I discovered that the patient could be made to hear sounds of a kind which he could not hear before. In all cases of deafness arising from any morbific action in the structures of the tympanum, or of the Eustachian tubes, or of the meatus externus,—such as a privation of the ceruminous secretion,—however, it is a remedy more decidedly useful."

Several other articles are mentioned, but the sanative rules and items are pretty much those mentioned by Itard and others. W. E. H.

XVII. *Phrenology in Connexion with the Study of Physiognomy.* By J. G. Spurzheim, M. D., of the Universities of Vienna and Paris, and Licentiate of the Royal College of Physicians of London. Illustration of Characters, with thirty-five plates. First Am. ed. improved, to which is prefixed a Biography of the author. By Nahum Capen. Boston, 1833.

This elegant work, now first issued from the American press, was originally published in London, in 1826. Though not strictly medical in its character, it contains matter of high importance to those who would wish to contend understandingly with diseases of the mind, and it is admirably adapted to excite an interest in the study of a novel branch of physiological science, which, while it elucidates many points in the history of morbid actions, both of the body and the mental functions, sheds light upon all the highest interests of society by its relations with education, jurisprudence, and ethical philosophy.

It is almost presumptuous to praise any of the labours of Spurzheim, so widely spread is the well-earned reputation of this rigorous observer of nature. The vast extent of his contributions to anatomy, in unfolding the intimate structure of the noblest of our organs, is now universally and gratefully acknowledged; but in this country, his physiological opinions are less known or appreciated. We have not yet recovered from the influence of the rancorous shafts hurled against the founders of phrenology by the Edinburgh Review, which so often, and so boastfully, but fortunately, so impotently threatened to strangle the Hercules in his cradle. The eloquent tongue that could best dispel this ignorance is silent. Scarcely had the light of that countenance which beamed with benevolence toward all mankind, shone for a moment upon his first American audience, when Spurzheim was no more.

The prophet is gone, but his mantle is upon us, and we hail with gladness the appearance of this volume, as one of the most attractive of his labours, and that best calculated to command general attention. The biographical notice which precedes it, contains a highly interesting narrative of the progress of Dr. Gall, in the discovery and diffusion of phrenological principles, and of the untiring exertions of Spurzheim, in his investigations into the anatomy and physiology of the brain, and in making known the results in Germany, Prussia, France, England and America. The manner in which Dr. Gall was first induced to attend to the form of the head, as an indication of the natural talents and turn of mind, is known to almost every one who reads. In 1796, he commenced his first course of private lectures at Vienna, and in 1799, Dr. Spurzheim, then a student of medicine in that metropolis, was numbered among his hearers. These lectures were repressed by the Austrian government in 1802; and in 1805, these two philosophers commenced their travels over Europe, to spread their opinions and to perfect their favourite science.

In their visit to the prisons at Berlin and Spandau in April, 1805, Dr. Gall pointed out the peculiar development of more than two hundred criminals, of whose history he was totally ignorant, and in the presence of the commissioners appointed by the Prussian government to witness the application of his doctrines, he declared to the astonishment of all, not only the general disposition and habits of the prisoners, but, in many instances, the nature of the crime for which they were committed. From a ward of female thieves, he instantly selected one woman, undistinguished from the rest by dress or any other mark, exclaiming, "for what reason is this woman here, for her head announces no propensity to theft!"

These examinations were made the subject of an official report to the Prussian government, and excited at the time, great attention and surprise. The account of the career of these physiologists while in company, and that of Dr. Spurzheim alone, since their separation, furnish so many authentic instances of similar tact, that it is impossible for any one to rise from the perusal without a strong desire for further information on the principles of a science which confers upon its professors so deep an insight into the nature of man.

In 1807, they jointly delivered their first course of lectures in Paris. During the succeeding year, they submitted to the institute a memoir on their peculiar views in relation to the anatomy and physiology of the nervous system, and delivered a private course of lectures illustrated with dissections of the brain for the especial benefit of Baron Cuvier and a select circle of his friends. This profoundly-learned and truth-loving naturalist was most favourably impressed with regard to their doctrine, as is known by the manner in which he habitually spoke of them; but in the report to the institute, which was drawn up by him, he did not dare to express himself with perfect candour, for the wonderful man who then guided the destinies of the world, enraged that his first comparative anatomist should condescend to be instructed by one who was not born within the limits of the great nation, and having recently granted reluctant permission for the award of a medal by the institute to Sir Humphrey Davy, severely "rated the wise men of his land for allowing themselves to be taught chemistry by an Englishman, and anatomy by a German."

This narrow-minded jealousy, and the consequent "faint praise" of the report, led to a rejoinder and much discussion; but the novel doctrine continued to gain adherents, and is now established in France by the adhesion of many of her wisest and best. In 1809, they commenced publishing their great work, "*The Anatomy and Physiology of the Nervous System in general, and of the Brain in particular; with Observations upon the possibility of ascertaining the several Intellectual and Moral Dispositions of Man and Animal, by the configuration of their Heads. 4 vols. fol. with an atlas of* 100 *plates.*" This magnificent monument was not completed until 1819. Two volumes and half the third were the result of their joint labours, and the remainder was completed by Dr. Gall alone, after his separation from Spurzheim, which occurred, as it is said, from some personal disagreement between the authors in 1813. It is deeply to be regretted that the great cost of this work places it beyond the reach of most of those who are far removed from large public institutions.

After the separation, Dr. Gall remained in Paris practising his profession, and devoting many of his leisure hours to the study of various animals which he had domesticated for the purpose. The biographer quotes, from a writer in the Birmingham Journal, a most amusing account of a visit to this philosopher in 1826. He found him at seven o'clock in the evening in a room, "the walls of which were covered with bird cages, and the floor with dogs, cats, &c." The doctor gave him an example of "offended pride" in a favourite bitch. By caressing her whelp with a degree of fondness which he denied to the mother, she immediately withdrew to her mat, from which she could not be again enticed. "She heeded not the hand which she had so earnestly endeavoured to lick but an instant before. She will not speak to me to-day, said the doctor." He also pointed out a black bird, whose secretiveness was so remarkable that he would not accept as a free gift, that very food which he would seize and devour, or conceal, the moment he was permitted to do so by stealth. We allude to these anecdotes merely to show the vast extent of those observations upon which the science of phrenology is founded. Gall died at the age of seventy-two, in the year 1828. His labours did not tend to the enlargement of the boundaries of phrenology after the separation in 1813, and the biographer takes leave of him at that period, to pursue the career of Spurzheim in his independent exertions.

The author of the work under notice, arrived in London in March, 1814, and delivered there two courses of lectures, but they attracted but little attention from the public. Some astonishment was indeed excited by his exhibition of the fibrous structure of the brain at the hall of the Medico-Chirurgical Society, and he had the satisfaction of enlisting in favour of his science the judgment of Mr. Abernethy, who was in himself a host. A fine contrast is presented between the extracts as given at page 44, et. seq. from the liberal and manly acknowledgments of that justly distinguished surgeon, in the second volume of his Surgery, and those from the Edinburgh Review, for June, 1815. After visiting several English cities, and spending some time in Dublin, Dr. Spurzheim proceeded to Edinburgh. His complete triumph over his calumniator of the Review is now well known, for the home of its arch enemy has become, as Dr. S. prophetically declared it should, the future centre of phrenological ntelligence, and even the journal itself has been compelled, laggingly, and with much reluctance, to yield to the current of public opinion.

In 1817, Dr. S. returned to London, and delivered another course of lectures, but his audience continued small. He published at this time four works in English—*The Physiognomical System, in octavo; Outlines of the System, in duodecimo;* his work on *Insanity, in octavo,* and a reply to the reviewers. In July he returned to Paris. Here he proposed to fix his residence for life, and continued his lectures until 1825. Dr. Gall also, at the request of the Minister for the Interior, renewed his lectures to the medical students, and phrenology became firmly established in France. Among those proselytes whose fame is calculated to give character to whatever secures their sanction, are mentioned M. de Blainville, Geoffroy St. Hilaire, and M. Boyer. During this period he published the following treatises:—*Sur la Folie; Sur la Phrenologie; Essai Philosophique sur la Nature Morale et Intellectuelle de l'Homme;* and *Du Cerveaux sous les Rapports Anatomiques.* In 1824 he married a lady, whose amiable qualities rendered him happy in domestic life, and whose talents made her an ardent leader of a sect of female phrenologists. She did not long enjoy the honours due to the wife of the greatest mental philosopher of the age. She died in 1830.

In 1825 Dr. S. again visited England, and far different was his reception from that which he received a few years before. For six years he traversed the British dominions—lecturing to crowded, and constantly increasing audiences at London, Edinburgh, Dublin, Liverpool, &c. every where adding to the number of his adherents, until the science became too firmly established to be shaken. Our limits will not allow us to notice the names of those distinguished men who are now engaged in prosecuting this study with a diligence proportionate to its importance; such information may be best obtained by reference to the volumes of the highly entertaining journal published by the Edinburgh society. The example of this society induced the institution of another at Paris in 1831, which now publishes a monthly journal, and ranks among its members the names of many men of the highest celebrity, in medicine, law, and natural science; from among a numerous host we select those of Broussais, Andral, Jules Cloquet, Falret, Ferrus, Pinel, Rostan, and Sanson.

On the 20th of June, 1832, Dr. Spurzheim sailed from Havre for the United States, where his bright career was destined so suddenly to terminate. Of his reception in this country we need not speak. The impression produced by his arrival, is fresh in the memory of all. Led on by ardent enthusiasm in the propagation of truth, his unremitted and incautious exertions, before he became acclimated, produced a slow fever, rendered more serious by the constant excitement of a brain already irritated, and worn out by the energy of his own genius, he closed the volume of his labours on the 11th of November, 1832.

This biographical sketch is replete with interesting anecdote, and forms an admirable introduction, by impressing upon the reader the high importance of the subject.

Of the work itself, but little need be said—it must be read throughout to be duly appreciated, nor is it likely to be laid aside until it has been thus perused. The first section contains a general view of the physiognomical signs of the body, the face and the head, the various temperaments, and their influence, as well upon the mind as the person; the peculiarities of the different tribes and nations of men; and the dissimilarity of the sexes, physically and mentally considered. The chapter on the physiognomical signs of the head, commences with the mode of dividing the brain into the basilar and sincipital; the frontal and occipital regions; it defines the limits of the forehead, as considered phrenologically, and its subdivision into the regions of the perceptive, and the higher intellectual faculties. Thus prepared, the student is enabled to comprehend the general grouping of the instinctive, the moral, and the reasoning organs, and is freed from those misconceptions as to the real marks of an unusual development, which result from hearing the terms *bump* and *protuberance* so constantly employed by the ignorant in speaking of the organs. Indeed, he will be surprised to observe, how few particular organs are dwelt upon throughout the work—he should therefore be provided with a cast and reference to the numbers, if he is yet unacquainted with the anatomical position of the most important convolutions of the brain.

The views given in the second section are broad and general. Characters widely dissimilar are continually contrasted, not by a close analogy of each particular trait, but by considering the relative development of the whole mass of the instinctive, the moral, and the intellectual organs. The subjects are classed in chapters, each chapter containing characters strongly influenced by the predominance or the deficiency of one or more important organs. Each sketch is accompanied with an engraved likeness of the subject, the phrenological deductions being drawn from the likeness, and followed by a short and authentic biographical notice, so that the student is enabled to trace for himself the connexion between the physiognomonic indication and the actual conduct of the individual. The plates are chiefly from the Cabinet d'Estampes of the great Royal Library at Paris, and the historical matter from several biographical works of high standing and celebrity.

The following is the order of the chapters. 1st. Characters in relation to morality—*Caracalla contrasted with Zeno, Richelieu and Walsingham,* &c. 2d. Religious characters—*Priestly, Richard Price,* &c. 3d. Independent characters—*William of Nassau, Prince of Orange, Ramus,* &c. 4th. Ambitious characters—*Philip II. Catharine II.* &c. 5th. Gay characters—*Piron and Carlin,* &c. 6th. Timid and bold characters—*skulls of a timid woman and courageous man—Cicero and the Gladiator,* &c.

This work was to have been completed by the publication of a second volume upon "Practical Phrenology," which has the organs necessary to the display of the arts and sciences for its object—unfortunately this volume never appeared. The student will be obliged to seek elsewhere the knowledge to which this work is intended as an introduction, but long may we wait for the appearance of one capable of communicating it in the happy manner of Spurzheim.

As an introduction, we recommend it highly to every curious inquirer, and especially to medical men, for the intimate relations between the science of phrenology and several branches of the healing art, cannot escape the observation of any enlightened physician. R. C.

XVIII. *Lectures on the Diseases of the Urinary Organs.* By B. C. Brodie, F. R. S. Sergeant-Surgeon to the King, and Surgeon to St. George's Hospital.

C'est un métier que de faire un livre comme de faire une pendule—it is as much a trade to make a book as to make a clock, is a fact of which our transatlantic brethren seem to be fully apprized. Scarcely a week passes that we do not receive "something new," from the craftsmen of the book-making trade in London or Paris! When we come, however, to the examination of these "somethings new," we are often not a little astonished at recognising tricked out in a new suit of best becomes, and bowing again for a small share of our "distinguished consideration," an old friend, or a discarded good-for-nothing, whom we had long ago consigned either to a snug corner in our "dome of thought," or to the dusty top shelf of our sanctum.

The celebrated B. C. Brodie, Sergeant-Surgeon to the King, &c. &c. has, within a few months past, "made a book," out of his already published lectures on the diseases of the urinary organs! In a very short and very modest preface, he apologizes to the experienced surgeons for the want of novelty with which they will find his book replete, observing that it is—

"Composed of lectures addressed to students who required to be informed on all points, and who would have profited but little by his instructions, if he had confined himself to the exposition of new views, and the detail of original observations."

We do not think the Sergeant-surgeon does himself justice in making this statement, for although the book is as evidently made up, and is as deficient in novelty as any one that was ever compressed within the two covers of a volume; yet he describes with so much accuracy morbid phenomena of the diseases of which he treats, and marks out with so much clearness and simplicity each successive step to be taken in their management, that we must confess we were not a little gratified and instructed by its perusal, and do not hesitate to recommend it not only to the notice of students, but likewise of experienced surgeons.

The work is divided into three sections. Part first is devoted to the consideration of the diseases of the urethra—under this head he includes strictures, some of the more trifling affections to which this canal is subject, and the treatment of retention of urine. He adheres to the old division of strictures into the "spasmodic and permanent," and gives a somewhat diffuse, though plain history of their causes, phenomena, and treatment.

The second part treats of the diseases of the bladder and prostate gland, and embraces nearly all the diseases to which these organs are obnoxious. Some exceedingly useful and practical remarks are to be met with in this chapter, though it contains nothing of sufficient novelty to demand particular notice.

The third part relates to urinary calculi, and comprehends the causes of their formation, their chemical analysis, and their treatment. It is, however, we think, more particularly calculated for the inexperienced surgeon, than for one of long experience in the science. As a specimen of the style of the work, we shall transcribe what is said on the employment of solvent injections, into the bladder, for the purpose of removing calculi. From a series of experiments which he instituted to test the value of this method of destroying the stone, our author is of opinion, that it may in some cases be resorted to with advantage. The mineral acids, according to him, undoubtedly exercise a powerful chemical action on calculi composed of the phosphates, much greater indeed than alkalies do on those which are composed of lithic acid; it is therefore in cases of phosphatic calculi, that we look for most benefit to accrue from the use of acid injections.

"It is now some years," says he, "since I began a series of experiments upon this subject. I injected into the bladder a solution of nitric acid in distilled water, in the proportion of one minim of the former to an ounce of the latter. As no inconvenience followed, I increased the quantity of nitric acid, until two minims, and sometimes two minims and a half, were contained in each ounce of the injection. The result was the same; not only the patients did not suffer, but where chronic inflammation of the bladder was present, they experienced considerable relief of all their symptoms; the desire to make water becoming less frequent, and, in particular, the secretion of the ropy adhesive mucus from the coats of the bladder being very much diminished, I next endeavoured to ascertain to what extent a solution of this strength was capable of acting on a calculus of the mixed phosphates. The change produced was sufficiently obvious, especially when the solution was made to pass over a calculus in a stream for a considerable time. It gradually diminished in size, and at last began to be broken down into minute fragments."

About this time an elderly gentleman consulted him for symptoms of stone in the bladder, complicated with a strictured urethra of many years standing. From the diseased state of the bladder, he did not think himself justified in recommending the usual operation to the patient. The calculus, from the matter discharged, (a viscid mucus, blended with small particles of phosphate of lime resembling mortar,) was manifestly composed of the phosphates, arising out of a diseased state of the bladder. Under these circumstances, and with the advice of Dr. Prout, he determined to try the experiment of injecting nitric acid into the bladder.

"For this purpose I procured the catheter which I now show you. It is made of the purest gold, which can be worked. It has a double channel, which are separated from each other by a longitudinal septum running the whole length of the instrument. Each channel terminates by a distinct tube at the handle, and has a separate eye, or opening, at the other end of the catheter. By means of this instrument, you will observe that a liquid may be injected into the bladder, entering it by one passage, and flowing out of it by the other, so that there may be a current through the bladder, without that organ being inconveniently distended. I had contrived a complicated apparatus for the purpose of making the injection, but I was afterwards led to prefer the simpler contrivance of an elastic gum bottle, having a stop-cock and an elastic gum tube attached to it. At first I washed out the bladder with some distilled water to get rid of the mucus which was lodged in it. Then I injected the solution of nitric acid very slowly, using the same liquid over and over again several times. Always after the operation was performed, the liquid which had been employed as an injection, was tested by the addition of a *highly concentrated* solution of pure ammonia; and it was always found, that, if the ammonia was added in a sufficient, but not too large a quantity, the phosphates were precipitated in abundance. The patient suffered no material inconvenience from this operation. It was continued sometimes for fifteen minutes, sometimes for half an hour, and repeated, according to circumstances, once in two, three, or four days. At last, in making water, the patient voided these two small calculi, composed of the phosphate of lime, with a small proportion of the triple phosphate. It was impossible to doubt that they had been acted on, and partly dissolved by the acid injection, and that they had, at last, come away by the urethra, in consequence of their having been thus reduced in size. For some time after this occurred, the patient was in a state of comparative ease. He had still symptoms of stricture of the urethra and diseased bladder, but he was free from the more urgent symptoms under which he had formerly laboured. By degrees, however, these symptoms began to recur, and I have no doubt, that there was a fresh formation of calculi produced chiefly, as was the case with the former ones, by the diseased state of the bladder. If he had remained in London, I should probably have been able to have given him some further relief, by repeating and continuing the use of the injection. But he went into the country, where, having been for a long time in a very bad state of health, he died, as I was informed, of some disease not immediately connected with that, on account of which I had been consulted."

From the observations which he has made since the occurrence of this case, Mr. B. feels himself justified in coming to the following conclusions:—

"1st. That where the mucous membrane is affected with chronic inflammation, the urine depositing a viscid, alkaline mucus, a most beneficial change may frequently be produced in the condition of the bladder by the injection of a weak solution of nitric acid into it.

"2d. That a calculus, composed externally of the phosphates, may be acted on by this injection, so as to become gradually reduced in size, while it is still in the bladder of a living person.

"3d. That there is reason to believe that calculi, composed throughout of the mixed phosphates, such as are met with in some cases of diseased prostate gland and bladder, are capable of being entirely dissolved under this mode of treatment."

This problem of the solution of calculi by chemical agents, has occupied the minds of many individuals, not only at the present epoch, but from time immemorial. Practitioners of the present day, however, generally speaking, administer their remedies chiefly with a view to the correction of those particular diatheses or states of the constitution, on which the formation of calculus matter seems especially to depend, believing that the schemes for the dissolution of urinary calculi are undeserving of confidence. Many difficulties, without doubt, present themselves to the adoption of this project. In the first place it is almost impossible to discover the exact composition of a stone, while it is concealed in the bladder. Again, there is great danger of producing violent inflammation of the bladder from the direct application of so powerful an irritant as a mineral acid to its already irritated mucous surface; and lastly, a diseased state of the urethra or prostate gland would likewise prove a serious obstacle. An opinion, however, from such a man as Mr. Brodie, and that founded on experience, is certainly entitled to weight; the truth of what he asserts remains only to be proven by the experiments of others, and we hope that the attention of those best qualified from their situations in public institutions, and from their experience to judge of the utility of the plan, will be at once directed towards it. To conclude, we beg leave to repeat, that taken as a whole, the work is admirably suited to the young surgeon, from the practical remarks with which it abounds, and that it must prove exceedingly interesting from its style to the more experienced, though containing, it is true, not much novelty in matter.

T. D. M.

XIX. *Elementa Medicinæ Forensis, Politiæ Medicæ, et Hygienes; ad usum Subalpinorum.* Taurini, 1832. Vol. IV. 8vo.

Although the title page of this work does not bear the author's name, we learn from the dedication, that we are indebted for it to Professor Martini, of Turin, whose zeal and indefatigable industry in the promotion of the medical art, and its collateral branches are too well known to require any eulogy from us.

It may be perceived that this work embraces a wide field, and we must confess that we were at loss to understand in what manner the learned author could compress even the elements of the three distinct though closely allied sciences of which he treats, in the four small volumes before us. His own words will, however, better explain his views on this point than any thing we can say. "Longus usus me docuit, duo in studiosæ juventutis institutione fore pernecessaria: scilicet brevitatem, atque perspicuitatem." This plan has been closely adhered to throughout the work, so much so indeed, that we know of no work with the exception of the aphorisms of the Coan sage, in which the same quantity of information is conveyed in so condensed and yet so clear a form.

It is divided into four parts, each occupying a volume, viz. 1. Elements of forensic medicine. 2. Elements of forensic chemistry. 3. Elements of political medicine, and 4. Elements of hygiene. As this division is different from that generally adopted, the following definitions of these branches may be useful.

> "Forensic medicine includes all questions in legal medicine, on which questions the healing art can throw any light." "Forensic chemistry includes all those questions in chemistry which may be called in to aid the laws." "Political medicine includes all those questions which have a bearing on the public health and morals." "Hygiene is that part of the medical art which has a peculiar reference to the preservation of health."

Although the author gives specious reasons for these classifications of the subjects on which he treats, we cannot agree with him in the necessity for these forced divisions of questions so intimately connected. The term medical jurisprudence as defined by Paris and Fonblanque, viz.

"A science by which medicine and its collateral branches are made subservient to the construction, elucidation and administration of the laws, and to the preservation of the public health," includes every thing that fairly comes within the field of medical observation, and the only subdivisions of it that are necessary, are into forensic medicine, including all questions to be solved in aid of the laws; and political medicine, comprehending a consideration of the policy and efficiency of laws and regulations enacted for the preservation of the public health, and physical well being of the community.

From the condensed character of Professor Martini's work, it will be impossible for us to enter into a consideration of its contents in detail, we shall merely attempt to give a general view of the manner in which he has treated the various questions with such observations as have occurred in turning over the pages.

The first part or that treating on forensic medicine is divided into nine chapters or books. The first has reference to the science generally, and the duties of a medical witness. The second is devoted to the consideration of the intricate subject of insanity, under which head the author includes many states of the body and mind which can scarcely be considered as appertaining to it, as hydrophobia, death by lightning and cold, &c. Book third is taken up with observations on a class of questions, which though they may become the subjects of legal investigation in Italy, can never occupy a court of justice in this country; these are miracles, demoniacs, soothsayers, &c. Book fourth treats on feigned or simulated diseases, or rather on simulation and dissimulation, the first of which is defined, to be the feigning of what does not exist; and the latter the concealment of what really exists. This chapter contains much valuable information, and is deserving of attention. The fifth book is on generation, and includes a consideration of those points which though they may become the subject of legal investigation, are not of a criminal nature. The sixth book is devoted to wounds and their consequences; and the seventh to poisons generally. In the eighth the author considers those crimes which have a reference to generation, as fœticide, &c. whilst the ninth treats of violent deaths from other causes than wounds or poisons, including also the subject of survivorship.

From the above abstract it will be perceived, that the author restricts the limits of forensic medicine very greatly, as compared to those allowed to it by English and American writers, and at the same time treats on subjects that ought not, and in this country never can become questions of judicial inquiry.

The second part as we have before stated, is devoted to forensic chemistry, which the learned Professor is of opinion constitutes a distinct science, and should not be considered as synonymous with toxicology, which is only one of its branches. He very justly observes, that it involves considerations of the most perplexing and difficult questions that can be presented to the medical witness, and that a mere acquaintance with the general principles of chemistry, is far from enabling a practitioner to come to a satisfactory conclusion as to the cause of those phenomena which present themselves in every case of poisoning; that he is correct in this opinion, cannot be denied, the records of our criminal courts are unfortunately crowded with reports of trials, showing the most lamentable discrepancies of opinion, and the grossest errors of medical witnesses, whose talents and standing in their profession, in other respects were of the highest order. This part of the work is divided into five chapters, and presents plans of treating this intricate subject which is novel to us, and deserves the attention of medical jurists. After the usual preliminary remarks on poisons generally, and their effects, the external characters and prominent chemical properties of each article are briefly but clearly described. It is, however, the third book or that on reägents, that we think confers the greatest value on this part of the work: taken as a whole, it is by far the most satisfactory account of the action of tests that we have met with, though in some of the details, the author has evidently committed some gross errors. As is observed in the preliminary observations, this portion of the work is so connected together, and each chapter is so dependent on those preceding and following it, as to render it difficult to consider it except as a whole. After giving a list of those reägents which are most generally employed in the detection of poisons by analysis, the author divides all poisonous substances into three great classes, viz. Solid, liquid and gaseous; these again are subdivided as follows. 1. Solid, into organic and inorganic; the solid inorganic, are still further separated into two classes; those which are white, gray, or whitish gray, and those which are yellow, green, red, blue or black. The organic solid poisons from two sections, namely; 1, immediate vegetable principles; 2, those containing other principles in addition.

Having thus marked out the great divisions, the author next proceeds to specify in what manner we are to ascertain whether the solid poison in question s organic or inorganic. This having been ascertained, the tests are to be applied, and the results compared with the tabular view given; these tables are so constructed that every chemical phenomenon produced in the investigation can be clearly appreciated, so that every step of the process, instead of being merely preliminary to others of more importance, is in itself a clue to the experimenter. This plan of verifying a poisonous substance, by commencing the research *ab initio*, and tracing through all its relations with other bodies, appears to be the best that has been devised. Much, however, will depend on the accuracy of the tables of the effects of reägents alluded to, for a single error in one of these will totally destroy the whole benefits to be derived from the plan, and we are therefore sorry to find that Professor Martini has committed some most glaring errors as respects the colours of some precipitates.

The fourth book is on antidotes, the best of which the author most justly observes, is the elimination of the poisonous agent from the stomach, after this has been done, the proper antidote may be administered. A list of these is given, of the value of most of which there can be no doubt, there are others, however, admitted, which are worse than useless; thus the alkaline sulphurets, sugar and water, and powdered charcoal are given as antidotes for arsenious acid; when it is well known that no dependence can be placed on any one of them against this virulent substance.

The fifth book is devoted to the consideration of chemico-legal questions, not appertaining to toxicology; as the mode of verifying spots of blood, &c.

The third volume treats on political medicine, which as we have already stated, the author considers as distinct from hygiene, though we must confess we cannot perceive the difference, it is true that if we admit the extended limits he has assigned to it, there can be no doubt, that it could not be included in that science; thus the chapter on crimes and punishments certainly does not belong to hygiene, nor do we think does this subject appertain to political medicine.

As we have extended this article to a greater length than was intended, we will merely add that the volume on hygiene contains much valuable information, mingled, however, with some superstitious and contracted dogmas which are unworthy of the talents and standing of the author.

The work will amply repay an attentive perusal, and although parts of it are superfluous and defective, it is, as a whole, highly creditable to the author. A translation of the portion of it on forensic chemistry, with some additions and corrections would be a valuable addition to our medical literature.

R. E. G.

XX. *Pathological Anatomy. Illustrations of the Elementary Forms of Disease.* By Robert Carswell, M. D. Professor of Pathological Anatomy in the University of London, &c. &c. Fasciculus first, Tubercle. London, 1833.

Since the year 1674, when the first special treatise on pathological anatomy, written by Bartholin, made its appearance, the attention of the profession has been more or less directed to the investigation of this interesting science. The valuable works of Morgagni, Bichat, Broussais, Cruveilhier, Baillie, &c. bear ample testimony to the industry and talent with which the study has been prosecuted. Not deterred by this host of authorities, who have almost, as it were, established boundaries to pathological research, Dr. Carswell, Professor of Pathological Anatomy in the University of London, has within a few months past, ventured to commence the publication of his views of elementary disease, and judging from the specimen which we have seen, the work promises to prove as interesting and instructive as any one with which in modern times the science has been enriched. It will consist of twelve royal quarto fasciculi, a fasciculus to be issued every two months, until the whole is completed, each one of which will embrace remarks upon one or more diseases, accompanied by coloured lithographic plates of the same. The classification of his subjects seems to us to be peculiarly happy, and it is in this particular point that most authors have laid themselves open to criticism. Although we have delineations, and accurate ones too, of almost every known morbid alteration, yet so little *system* has been observed in their arrangement, so many dissimilar diseases brought at one and the same time, before the eye of the student, that he becomes lost in the maze of *disease*, and but too often finds himself unable, after all his labour, to distinguish one morbid lesion from another! Dr. C. in order to avoid this confusion, treats of but one elementary lesion or morbid alteration at a time, and traces it in its several changes in various organs, fòr instance the first fasciculus, (the only one as yet published,) is dedicated to the delineation and description of tubercle; its location, colour, consistence, composition, origin, progress, and effects upon the organ in which it may arise, are all noticed, and with a fidelity to the facts developed by dissection, and a searching scrutiny into their relative value, that reflects the highest credit on Dr. C.'s talents, industry, and capacity for the execution of the truly arduous task which he has undertaken. Four coloured lithographic plates, each containing four or five drawings, exhibiting tubercle in several different organs, accompany this number. These are executed in a masterly style, and convey, generally speaking, correct and highly interesting views of the morbid appearances produced by this almost inscrutable disease. This work deserves, and will no doubt receive the patronage of the profession, and we do not hesitate to say, that in continuing it, as he has begun, Dr. C. will confer an everlasting benefit upon the community at large, and establish for himself the enviable name of a skilful and faithful pathologist. T. D. M.

XXI. *Elements of Chemical Philosophy on the Basis of Reid, Comprising the Rudiments of that Science, and the Requisite Experimental Illustrations, with plates and Diagrams.* By Thomas D. Mitchell, M. D. Professor of Chemistry and Pharmacy in the Medical College of Ohio, &c.

Dr. Mitchell has well remarked, in his preface, that the offer of an additional treatise on elementary chemistry, at this time, may seem a work of supererogation, and yet the reasons which he assigns for encountering critiscism on this head, are such as almost every lecturer on the subject, will pronounce to be valid. With the elaborate treatise of Professor Silliman, the American reprint of the last edition of Dr. Henry's copious work, and the more condensed and convenient work of Dr. Turner, which has already gone through four editions in this country, before us, we should be prepared to scrutinize closely a new compilation, were it not that the kindly feelings excited by an attempt to diffuse useful information through the western parts of our country, check, at the outset, such an examination as the nature of the case would otherwise suggest. In truth it requires all the effort of those feelings to examine with impartiality a work on the basis of the system, which we have conceived to be least adapted to students, and least complete of any of those which have appeared more recently in one language, and which always struck us as being a "practical chemistry"* only in name. The American editor has however much improved the work for the use of the student, and has made both additions and subtractions of a useful kind. The whole of the first part of the work Dr.

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* Elements of Practical Chemistry, &c. By David B. Reid, &c. &c.

Mitchell is directly responsible for, as in part a compilation, and in part original. This contains a general account of chemical affinity, treats of light, heat, electricity, &c. and gives a brief account of the nomenclature in use in England and this country, and devotes a chapter to the discussion of specific gravity.

The treatment of the subject of affinity is plain, and though elementary, is, upon the whole satisfactory. Some of the details, however, we conceive to be erroneous, such as that the attraction of gravitation is the same force with cohesion, a force acting at *sensible* distances, and decreasing in the inverse ratio of the square of that distance, the same as a force acting only at *insensible* distances, and therefore decreasing in a high ratio of the distance; that ammonia is the only *possible* combination of nitrogen and hydrogen; that the ratio of one to one and a half in combinations stated in equivalents, will disappear in compounds in the progress of modern chemistry. It may be that we lay too great stress upon the necessity of giving the student clear views of the laws of definite proportions, and that little more than a page is required to state all that should be known on the subject. On the necessity for an *accurate* expression of those laws there cannot be two opinions. The *one* which our author gives is:—

> "A striking feature in this view of combination, is that among the different uniting properties of the same bodies, there is an intimate and uniform relation, whereby the quantity of one of the two bodies which enter into a second combination, is a multiple, by a whole number of the quantity contained in the first combination."

The exceptions to such a statement are too numerous in the actual state of science to admit of its use, even if we adopt entirely the system of rejecting small fractional numbers. The atomic theory affords a strong ground for the rejection of the idea, based upon the reciprocal nature of the affinities of the particles of bodies. The cautiously accurate expression of this law, by the editor of the American edition of Turner's Chemistry, stands in such bold relief to the above, as to require merely to be quoted as the best commentary upon it.

> "When one body B, combines in two or more proportions with another body A, the numbers representing the quantities of B, combined with the same quantity of A, are multiples by a whole number of some particular number; that is, contain some number a number of times without a remainder. The number so contained may be the same as the number representing the lowest proportion, or it may be different."

Information upon subjects of physics, (heat, light, &c.) is generally given in considerable detail in chemical works; we should not disapprove a contrary course, namely, one which would confine itself to such discussions only as are necessary for the elucidation of chemistry, properly so called, but we hold that in this latter case peculiar caution is required as to the entire accuracy of the information conveyed: a student thoroughly imbued with the subjects under discussion, may be able to allow for looseness of expression, or to correct inaccuracies of detail, but when the information is only general, he has no means of so doing. These remarks have a direct bearing upon the portion of Dr. Mitchell's work now under consideration, as the marginal queries which we have had occasion to make would testify; our limits must prevent our bringing forward many examples. The much dwelt-upon experiment with the concave mirrors to exhibit the reflexion of heat, is an instance in point.

> "Substitute a lump of ice for the heated iron ball, and very soon the thermometer in the other focus will be affected, and its fluid will fall. Now, say some, this is proof that cold is a positive agent, and not the mere abstraction of heat. They contend, that the frigorific particles pass from the ice to the thermometer, and act on it, by a positive power. This, however, is a mistake: remove the ice from the focal point to a place midway between the mirrors, and the thermometer will not be affected; whereas, on the supposition of a positive frigorific agency, the reverse should occur."

Just such an experiment could be made, the mirrors not being near to each other, with the heated ball, and just the same reasoning used to show that heat is not a positive agent. But the deductions would be alike unwarranted by the experiment. Those who suppose *cold* to be a positive agent, trace it from the cold body to the adjacent mirror, from this by reflexion to the second mirror, by which it is converged upon the thermometer in the focus; and the experiment stated, plainly does not prove that such is not the case, neither would a similar one show that heat did not pursue the course just traced for *cold.* The reasoning does not touch the point, and the last and lately deceased advocate of the doctrine of *cold pulses* would have triumphed in such an examination of his theory.

We pass over the description of the mode of righting the walls of the Conservatoire des Arts, which if not accurate, answers all the purpose, and that of the scale of Wedgwood's pyrometer, the instrument having ceased to be one relied on for philosophical purposes. The following definition of conducting power is not so to be treated as a matter of indifference.

> "All heated bodies seem to have a disposition to send out their caloric to other bodies; or rather this tendency to escape, seems to be the characteristic of caloric itself, and hence we have the term *conducting power,* and this property is exceedingly unequal in different substances, &c."

Again, the experiment given to show that water does *not* conduct heat, will when performed with the requisite nicety, not be attended with the results stated, and will show either that the vessel containing the water has *conducted* heat downwards, and then imparted it to the water, or that the liquid itself is a conductor, a result decisively proved by well-known experiments. But these few remarks must suffice for the chapter now before us.

The chapter on the nomenclature of chemistry, without going into detail, gives a view of that in use in England and this country, and which the professor has deviated from in more than one instance which we may notice in the sequel. For the early date at which the philosophical views of Dr. Mitchell* in relation to the non-existence of any principle which could exclusively be allowed to be *the* acidifying principle, he deserves credit.

The following directions are given in a brief exposition of the subject of specific gravity, for ascertaining the specific gravity of a body which is lighter, bulk for bulk, than water.

> "Attach to the light body, by means of a fine thread, another body, sufficiently heavy to sink both in water; having previously taken the weight of the heavier solid in water, and of each in air, we are next to weigh them jointly in water, and from the difference between their weight in water and in air, we

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* New York Med. Repos. 1812-13.

must subtract the difference between the weight of the heavy solid in air, and its weight in water. The remainder will indicate the weight of a quantity of water equal in bulk to the light body, and we can thus find its specific gravity in the way directed above."

The directions include one operation of weighing, and two of calculation, which are unnecessary; viz. weighing the heavy body in air, adding that weight to that of the light body, and then taking it from the sum.

We have now arrived at the "basis," more properly chemical, though avowedly less original than the portion which we have cursorily examined. The author has taken pains in most cases to assert the rights of his American brethren, and to notice their experiments particularly. Thus, the early experiments of Dr. Woodhouse on carbonic oxide, on the inflammable mixture resulting from the calcination of carbonate of potassa with soot are given; the oxy-hydrogen blow-pipe is attributed to its real inventor, and its merits properly enforced; the excellent method of preparing nitrogen given by Professor Emmett is referred to; the self-regulating reservoir for hydrogen of Dr. Hare is spoken of: the experiments of Dr. Bridges on the residuum from the preparation of oxygen from nitre are given, &c.

The details of operations and cuts of apparatus given by Dr. Reid are omitted in this edition of his work, but the useful diagrams for exhibiting combinations by weight and volume, and for indicating the results of complicated reäctions, which by the by we consider the best part of his work, are retained in the American edition. In the order of substances, oxygen and hydrogen are given first, their compounds are next noticed, then follows nitrogen, its compounds with oxygen, sulphur and its compounds with oxygen and hydrogen, selen*ium* and its compounds, phosphorus and compounds, carbon, boron and compounds, chlorine, iodine, &c. then the metals in orders, *ammonium* being included in the list; a brief chapter on animal chemistry, and one on analysis close the work. Vegetable substances are treated early in the stage of the work under the head of compounds of carbon and hydrogen. It would be obviously impossible to carry our readers over this ground in reasonable limits, and as the criticisms would bear on Dr. Reid oftener than upon Dr. Mitchell, the task is not one for which our readers would thank us. A few points in the original matter seem to require notice, one of them is the discussion of the question, whether atmospheric air is a chemical compound of nitrogen and oxygen, or a mere mixture of those gases. We quote—

> "And here it may be affirmed, that in the operation of chemical attraction between any two bodies, an entire change of properties follows. What then are the properties of oxygen and nitrogen in a separate state, and what are the peculiarities of atmospheric air? If none of the essential and characteristic qualities of nitrogen are found in atmospheric air, then it follows that a chemical action has ensued, between it and oxygen, in the formation of common air. The leading feature of nitrogen is its unfitness for respiration and combustion; animals die when subjected to its influence, and lighted tapers are instantly extinguished. But atmospheric air is the grand element of life; and equally indispensable in the maintenance of ordinary combustion."
>
> "There are also dissimilarities between oxygen gas and common air. The former is too stimulating to be constantly inhaled, while the latter is precisely adapted to the condition of the lungs in a healthy state. They differ moreover

in specific gravity, and in their powers to maintain combustion. It is plain to the most cursory observer, that the distinctive features of nitrogen and oxygen do not exist in atmospheric air."

"But it is said, that nitrogen and oxygen will be found detached from each other, in a tube which has been filled with common air, and closed perfectly tight, after some months have elapsed; and so also will mercury be separated from the oxygen with which it was combined in the form of oxyde, after the lapse of a given period; and yet no one, for this reason, denies that oxydes are chemical compounds."

The same train of argument might be used to show that any mixture of solids, liquids, or gases, was a chemical combination, for example, of sand and sugar, of carbonic acid and hydrogen. What can be meant at the present date by saying that nitrogen and oxygen confined in a tube will separate from each other? Have the experiments of Dalton, of Mitchell and Graham, on the diffusion of gases through each other gone for nothing? Or has not the author subjected himself to a just stricture for enforcing by such arguments, and by such statements, a theory, to which the circumstance, that it was supported by him in 1813, lends undue weight?

"These," says our author, "are the views that I have entertained on this subject for twenty years; for a fuller account of them, the reader is referred to the *Memoirs of the Columbian Society*, published at Philadelphia in the year 1813."

There are few opinions in a rapidly advancing science, which it would not be well to revise under the lights of new facts, oftener than once in twenty years.*

We will hastily notice a few of the marginal references made in looking over the remaining portion of the work.

An original remark on the chapter on nitric acid contains a criticism of Liebig's test for that acid by the sulphate of indigo, in the use of which we will promise our author success if he will substitute *muriatic* acid in lieu of the sulphuric acid which he adds to the mixture of the acid to be tested with the diluted sulphate of indigo.

The *oxygenated* nitric acid would have been well left out, notwithstanding its insertion by Dr. Reid; the discovery of the deutoxide of hydrogen prevents the necessity of our entrance into the labyrinth of highly oxygenated substances which the researches of Thenard, precedent to that discovery, had presented to him. In the compounds of carbon and hydrogen the remarkable fact, which bears so strongly on the philosophy of chemistry, is overlooked; namely, that their atomic constitution cannot with propriety be stated so as to reduce the numbers to their prime or equivalent ratios; thus, it seems that one atom of olefiant gas is not composed of one atom of carbon and one of hydrogen, but actually of two atoms of carbon and two of hydrogen. Admitting the superolefiant gas of Mr. Dalton, which has not been separated from mixture with the other carburets of hydrogen, both that gas and one discovered and examined by Mr. Faraday consist if the prime ratios of the equivalents be taken, of one equivalent of carbon and one of hydrogen, but are, more consistently, stated the former to consist of three atoms of carbon and three of hydrogen, forming one atom of the gas, the latter of four atoms of carbon and four of hydrogen forming the compound atom.

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* In passing we object to the derivation of *eudiometer*, "literally, a *measurer of air*," and to that of ammonia, "from *Jupiter ammon*."

The experiments of Mr. J. F. W. Johnston have satisfactorily shown that the black residuum from the preparation of cyanogen is *not* carbon, but consists of carbon and nitrogen, showing the necessity for the reëxamination of so many of what may be called the *traditional* statements of the science. Our author is here a little behind the *year*, as well as in some other matters, for example, in the statements relating to protoxide of chlorine which we conceive to have been satisfactorily proved, by the experiments of Soubeiran, to have no existence.

But we grew tedious with desultory notices, and will close by noting two points, in relation to which the task of fault-finding is not imposed. The first of these is an interesting statement of the assertions of Lavoisier and others, of the metallic nature of the bases of the alkalies and earths; the second, the method of treating the tests for the compounds of arsenic with oxygen. We quote from the first-mentioned:—

"An examination of the works on chemistry, will show a constant uniformity in ascribing all the credit of discovering the alkaline and earthy metals, to Sir Humphrey Davy; and I am quite willing to do full justice to the memory of that eminent and highly useful philosopher. It does appear to me, however, that injustice has been done to Lavoisier in this matter." "It will not be denied, that a part of the book called the *Elements of Chemistry*, was not written by Lavoisier; but the whole is so entirely devoted to the antiphlogistic system as to give the production a singleness of character, justifying the appellation so uniformly applied to it."

"In a note at the foot of page 213, the translator says, 'there are some experiments related in the Transactions of the Turin Academy, which give reason for suspecting that soda is a modification of magnesia; this latter substance, according to the experiments detailed by Baron Born, seems to be a metallic *oxyde*. From analogy, we may presume, that *potash* is also a metallic substance, in some hitherto unknown state of combination. We shall thus exclude all the alkalies from the class of simple, elementary substances.'"

"In page 217, Lavoisier thus writes"—

"It is extremely probable that barytes, which we have just arranged with the earths, is an oxyde; for in many experiments, it exhibits properties really approaching to those of metallic bodies. It is even possible, that all the substances we now call earths, may be only metallic oxydes, irreducible by any hitherto known process."

"A section is added by the translator, on the *metallic nature of the earths*, in which, after detailing the processes by which the metallic bases of lime, barytes, and magnesia, were repeatedly obtained; he uses the following language"—

"Should they be *eventually confirmed* by rigorous examination, a new light will be thrown on several of the most difficult parts of chemistry, in exact conformity with the predictions of Lavoisier, who supposes that those substances which have long been considered as primitive earths, are only metallic oxydes, and that their reduction has hitherto been prevented by the attraction which subsists between them and oxygen, being stronger than that between oxygen and carbon."

"To this account, Baron Born adds, that"—

"He expects soon to learn, that the silicious and argillaceous earths are likewise metallic oxydes; and that in this case, the whole class of earths and stones will disappear from the mineral kingdom."

We have not spoken of the peculiar adaptation of this work to students of medicine, since it contains about as much as other general treatises, if not more, that is directly interesting to them; in this point there might we apprehend be considerable improvements in works intended specially for the student of medicine. B.

XXII. *Intorno alla Natura del Miasma Cholèroso Asiatico congetture di* B. M. Trasmesse alla Società Medico-Chirurgica di Berlino. Lucca, 1832.

Conjecture relative to the Nature of the Miasma productive of Asiatic Cholera. By B. M. &c.

The author of the little work whose title is prefixed to this article, Professor Mojon, of Genoa, occupies very deservedly a conspicuous station among the members of the medical profession in Italy, both as a profound and erudite pathologist and physiologist, and as a skilful physician. His reputation is not limited to his native country, but has extended abroad, where he is known as the author of many valuable publications, some of the principal of which have been translated into various languages, and widely circulated in France, Germany, and England. Occupying, during the dominion of Italy by the French, a professorial chair in the medical department of the University of Genoa, which chair, it may be proper to remark, he gained by concours among twenty-four competitors, he shared, soon after the transfer of Genoa to the Sardinian government, the fate of many of his most distinguished colleagues, and was dismissed on account of his political sentiments, from the school of which he was considered one of the brightest ornaments. But this event, far from lowering him in the estimation of his countrymen, the majority of whom are, as may be presumed, hostile to the present order of things, or abating his zeal for scientific pursuits, tended to render him perhaps more popular than he was before, and, as we may judge from the various physiological and practical works, with which he has enriched the medical literature of his country, to stimulate him to further efforts.

The last, and not the least interesting of those publications, is, we believe, the one at present before us. This essay was written, as we are informed, with a view to its being published at Genoa. Meeting, however, with opposition on the part of government, and not feeling disposed to modify his views, or expunge passages which were thought obnoxious, the author changed his plan, and addressed his manuscript to the Medico-Chirurgical Society of Berlin. A short time after, a copy of the work found its way to Lucca, and was there printed and published, without, however, as we learn from the editor himself, the sanction of the author.

This unwillingness on the part of the government of Genoa to allow the publication of an essay on a purely scientific subject, would, perhaps, have been calculated to surprise us, were we not fully aware of the difficulties which authors encounter in countries deprived of the liberty of the press, and of the ridiculous height to which opposition to the manifestation of independence of sentiment is carried in the territories of his Sardinian majesty. A very careful examination of the present work has not enabled us to discover in it any thing calculated to prove offensive or dangerous to government, unless the decided opposition of the judicious and learned author to the doctrine of contagion, and to the measures based upon that doctrine—sanitary cordons, isolation, quarantines, &c. be regarded in that light. On these points the Sardinian, like many other governments in Europe, appears to be very resolute, and determined, by making use of its power over the press, to prevent the expression of views different from those which it has thought expedient, from various motives, to adopt. Happy would it be if the change of sentiment, relative to the mode of propagation of the disease, and to the sanitary measures necessary to be employed, which has taken place in the north of Europe, could be looked for on the other side of the Alps. Ignorant themselves of truth on the point in question, and imposing silence on those capable to enlighten them, the Italian governments and the Sardinian, the most despotic and ignorant of all, more particularly, are not likely to grant any modifications in their sanitary codes, and the disease, should it ever break out in Italy, may, in consequence, be expected to occasion the greatest havoc. If the offence of Dr. Mojon consists, as we suspect it does, in having expressed sentiments favourable to the opinion of the non-contagion of the cholera, he will no doubt find sympathy in France, in this country, and in England, where the doctrine he upholds is almost universally adopted,—where the liberty of the press is enjoyed by all classes of society,—where the fullest scope is allowed to the exercise of the intellectual faculties, and where scientific subjects are discussed without any reference to the partiality or dislike of government.

But to return from this digression. Dr. Mojon's essay has been translated into the French and German languages, and may thereby, independently of the claims it possesses to our attention from the high reputation of the author, be presumed to be worthy a notice in this Journal. Dr. Mojon may also, for another reason, be regarded as entitled to a hearing on the subject of cholera. He must not be classed among those numerous physicians of Italy and elsewhere, who have studied the etiology, pathology, and treatment of cholera in books, and presume to enlighten the rest of their professional brethren on those various points. So far from resting satisfied with information derived in this easy way, he left Genoa and repaired to Paris as soon as he learnt that the cholera had made its appearance there, and enjoyed the fullest opportunity to investigate the causes and nature of the disease in the numerous and crowded hospitals of that metropolis. Notwithstanding these various recommendations, however, we doubt whether he will make many proselytes in this or any other country, inasmuch as his object is to advocate a doctrine which has heretofore enjoyed but little popularity among the members of the medical profession—that the efficient cause of cholera consists in animalculæ floating in the atmosphere, and which, penetrating into the system through all the pores, situated on the internal and external surfaces, give rise to the symptoms of the disease. In upholding this doctrine, Dr. Mojon has not the pretension to claim credit for originality, aware as he is, that a similar view of the cause of cholera has already been advocated by several modern physicians, by Hahnemann, Lamotte, Neale, &c. His object is simply to add to the facts and arguments adduced by them, others which, in his opinion, are calculated to give additional weight to the theory they defend; and we have no hesitation in saying, that, so far as we are able to judge, he has executed his task in a learned and ingenious manner.

In saying thus much, however, we do not wish to be understood as admitting, that Dr. Mojon has succeeded in making a convert of us. For although he may deserve the credit we have bestowed upon him, although he may have shown that the animalcular doctrine is as likely as not to be correct;—that it is entitled to at least as much respect as any other doctrine with which we are acquainted; we do not think that either he or any one else has as yet demonstrated its truth in a conclusive manner. In order that this should be effected it would be absolutely necessary to produce those insects; to render them appreciable to the senses. We fully agree with Dr. Mojon, that it is not proper to deny the existence of a thing on the mere ground that it has not been seen, and that we are not as yet conversant with all its characteristic properties. But at the same time we are decidedly of opinion, that in a question like the present, few individuals will feel disposed to admit the necessary agency of those insects from the mere circumstance, that by so doing they will be better able, than by any other theory, to explain the various phenomena presented by the malady. The facility which the hypothesis affords, entitles it, no doubt, to attention and respect. But it will not be deemed sufficient. Some positive proof of the existence of the animalcules is required, and should none be offered it will always be in the power of individuals to deny their agency, and to maintain that we have no evidence of the possibility of an epidemic of so wide spreading a character—the cases of which are characterized by so frightful and appalling a train of symptoms, arising from the ingestion of insects of so diminutive a size that their existence can only be inferred through the aid of analogy.

We are aware that Varro, Lucretius, Colummella, Vitruvius, Kircher, Le Gendre, considered the plague as arising from animalcules—that Langius, Lancisi, Fabre, Linnæus, Paul Ricca, Moufflet, Scuderi, Crawford, applied the same doctrine to the explanation of the same disease, and of miasmatic fevers generally; that Hautmann, Plenitz, Desault, Rasori, Puccinotti, Targioni, Acerbi, &c. regarded contagious diseases as arising from the action of living organized creatures. But it may still be maintained, that this great array of names avails but little in support of the animalcular doctrine, because, distinguished as most of those individuals may be, they have after all done little else than lend their aid to the support of an hypothesis, and adduced no facts capable of proving satisfactorily the existence of the cause for which they contended.

Without admitting or rejecting therefore, the theory which Dr. Mojon has undertaken to defend, we proceed to state in as concise a manner as possible some of the facts and arguments he has collected in its favour.

1st. There are certain diseases incident to sheep, oxen and horses, of which the cause was formerly unknown, but which subsequent experience has shown to depend on the action of various kinds of insects that find their way into, and live and multiply in the viscera of those animals. Baron describes an epizootic disease which prevailed among the Gallinacea of Lombardy, in 1783, and which was finally discovered to depend on a similar cause. Many instances are on record of forest and other trees being destroyed in great and even extraordinary numbers, in various parts of Germany, England, &c. After giving rise to much controversy, the cause of this mortality was finally ascertained to arise from other varieties of insects.

2d. The author describes the localities of that part of India where the disease is supposed to have originated; its soil, marshes, climate, &c. and thinks, that from the peculiar nature of the country, as well as from the great number of dead bodies allowed to putrify on the banks of the Ganges, there may be presumed to originate swarms of insects capable of acting as the exciting cause of the cholera, which he regards as an endemic of that country.

> "If, as he remarks, we consider 1st, that in 1817, during two consecutive seasons, there reigned along the coast of the gulph of Bengal a very extraordinary atmospherical constitution, and that the weather, instead of being very warm and clear, was, at the commencement, cold and hazy; 2d, that there fell a great quantity of rain, at a period when there usually prevails considerable dryness; and, that from this circumstance there resulted inundations such as had not been observed for a long time before, along the Delta of the Ganges; 3d, that the rainy season was very warm, and the nights cold and windy; 4th, and lastly, that the crop of rice and of vegetables generally was, in that year, very small; if we have regard to all these circumstances, I say, it will no longer appear extraordinary that the miasma of the disease, which had heretofore been only endemic in those localities, should by these effects have acquired an unprecedented degree of development, and passed into other countries, where meeting with a combination of circumstances suitable to its development, it increased in force, and thence propagated itself as far as ourselves. No one is ignorant of the fact, that after heavy rains, thunderstorms and inundations, swarms of insects emigrate to immense distances; and that encountering circumstances favourable to their multiplication, they remain there for some time, and thence proceed to other places, causing in the inhabitants diseases of a peculiar character."

3d. The peculiarity manifested by the disease, of breaking out and raging extensively in climates of the most opposite character, and under the most diversified degrees of temperature, may be adduced in favour of the animalcular doctrine. We are not acquainted with any general cause of disease capable of prevailing under those very various circumstances, except the one in question; because insects are known to accommodate themselves to every climate, and to every temperature. But although the cholera has appeared in countries differing greatly in respect to climate; yet it is not less the fact, that it has generally been found to increase in summer and decrease in winter. In other words, it is influenced in its progress by those circumstances which tend to favour the multiplication of insects. It is also modified by changes of temperature which take place in any place during the time of its prevalence—as for example when night rains are succeeded by intense heat during the day. Now, we all know, that insects increase or diminish in number, that the virulence of their action upon animals is modified, in the same season, according to the degree of atmospherical temperature, and that they greatly multiply and become more offensive in weather such as we have described. The peculiar property of the disease to attack distant places, and leave the intermediate spaces free, is more easily accounted for by the supposed agency of insects, than by any other cause; for they are known to stop only in places where they discover the existence of circumstances requisite for their multiplication; and as these circumstances are generally met with in large and populous towns, and especially in the habitations of the poor and needy, who are usually regardless of the precepts of hygiene, live in the lowest, least ventilated, and most filthy situations, we find that the disease prevails there with most intensity, while other places are entirely exempted, or at least suffer in a less violent degree.

4th. It has generally been observed in those places where the cholera reigned in the epidemic form, that previous to its appearance, the atmosphere was hazy, though the sky remained cloudless, and that the sun appeared as if deprived of its usual brilliancy. The explanation of this phenomenon is probably to be derived from large swarms of insects floating in the air, and preventing the rays of the sun from producing their ordinary degree of light.

Writers and observers of great merit have viewed the large number of insects they saw in many places where the cholera has reigned epidemically, as the precursors of the disease. That such swarms of insects have been found to exist in many places—that they have continued to do so for some time to an extraordinary extent, are facts too well authenticated to be called in question; and that there may exist swarms of other insects, which though too small to be seen by means of the unassisted eye, or with aid of the instruments at present in use, are yet capable of occasioning by their action on the vital organs a variety of diseases, is not so preposterous a supposition as some might perhaps believe. There appeared two years ago, in Sardinia, a black cloud which, during a few hours, enveloped the whole island. Through the effect of that cloud the crop of wheat was completely destroyed; every grain being charred and deteriorated. By many it was supposed that this cloud or fog which was carried to the island by the south wind, was formed like those which sometimes spread over the plains of Africa, and destroy the whole vegetation by an immense mass of very minute insects. Writers talk of a yellow dust, and of fetid clouds which are observed in countries where the cholera prevails, and Herrmann is of opinion that the atmosphere of places visited by the pestilence contains a substance which is deposited on cold surfaces, and has the appearance of animal mucus. It has also been shown, that during epidemics of cholera, alimentary substances take on the putrefactive process, much sooner than under any other circumstances. Such, at least, has been affirmed to be the case by Capplez, Lamoth and Coulier.

5th. The prophylactic treatment of cholera may serve to confirm the truth of the animalcular doctrine. To live with sobriety, to guard against atmospherical vicissitudes, to keep the body clean; and to make use of strong odours, as those of camphor, cajeput oil or garlic, and to wash the hands and face with vinegar and water, or a solution of the chlorate of lime, are the means recommended. What other measures could be resorted to for the purpose of guarding against the effects of insects floating in the atmosphere, or against verminous affections generally.

6th. The symptoms of cholera bear a considerable analogy to those of the last mentioned diseases; with this difference, however, that the cold and shrivelled appearance of the surface, the blueness of the skin, and the peculiar changes in the blood, which are so generally found to occur in cholera, are not met with in the others. The absence of those symptoms probably depend on the circumstance, that in cholera the insects which give rise to the disease, penetrate along the trachea and bronchia into the lungs, and derange the pulmonary functions to such a degree, that the process of hematosis is not effected in a suitable manner; the oxygenation of the blood is not complete, and the animal heat remains deficient; while in verminous affections, the exciting cause being limited to the gastro-enteritic system, does not produce the morbid alterations depending on the derangement of the respiratory functions. The dark colour of the blood in cholera, is not caused by the abundant secretion of sero-mucous fluid which takes place in that disease; for in other complaints, evacuations equally profuse of a similar substance, take place without being followed by a corresponding change in the blood. Morgagni states, that he lost sixteen pounds of serous fluid in the course of twelve hours; and yet his blood is not said to have undergone the alterations noticed in cholera.

7th. The treatment found most appropriate in cholera, lends support to the doctrine which ascribes this disease to the action of minute insects. Calomel, tartar emetic, opium, cajeput oil, spirit of turpentine, ether, camphor, hydrocyanic acid, ice, castor oil, are regarded as heroic anthelmintic remedies, and have all been employed with more or less success in cholera. If notwithstanding the use of these remedies, the cure is not effected, this must be attributed to some peculiarity of constitution or temperament in the individual affected, to the intensity of the attack, or to other circumstances depending on the nature of the climate, localities, &c. Hence leeches, the lancet, warm, dry and irritating frictions, blisters, sinapisms, baths, and many other external remedies do not succeed in cholera, otherwise than by remedying to the secondary symptoms of complication, which may occur during the course of an attack, and not by removing the efficient cause of the disease, which appears to be the result of an irritation, and not of inflammation.

8th. The appearances discovered on dissection may also be adduced in favour of the theory in question. In many cases, no changes from the healthy condition, sufficient to account for the symptoms, can be discovered. The redness which is sometimes noticed in the gastro-enteritic mucous membrane, is the result of a preëxisting chronic inflammation, or indicates a purely congestive state of the vessels. The most constant phenomenon observed, consists of minute spots situated on the lining membrane of the alimentary tube, of the tongue, throat, &c. and imparting to the finger a sensation analogous to that produced by grains of sand. These spots were discovered by Jahrn, of Berlin, who examined them with the aid of the microscope, to be vesicular, and filled with a limpid fluid. It is very probable that these minute eminences are produced by choleriferous insects, in the same way as those in which are found the *Acarus scabiei.* Professor Germac has ascertained, from microscopic injections of the vessels of the intestinal coats, that the substance employed, penetrates into the glands of Brunner and Peyer, but never into the choleric globules. By scraping off, with the back of a scalpel, the mucus adhering to the internal surface of the intestines, we discover the above-mentioned glands. They are of a pale-red colour, a circumstance which causes them to be easily distinguished from the choleric globules, as these are always of a deep red hue, analogous to that observed on skin deprived of its cuticle by means of a freshly applied blister.

9th. Dr. Martin, of Vienna, affirms, that he has observed on the skin of several choleric patients, miliary eminences analogous to those found on the intestinal mucous membrane. Individuals placed under the influence of the choleric miasma, have sometimes become affected with pruritus, redness of the hands and face, and very minute vesicles of the same parts. Facts of this description were noticed at the Hospital St. Louis, of Paris, by Alibert, Duchesne, and Poisseux. At Warsaw, a cutaneous disease was observed by Hochler, and received from him the denomination, of *Herpes zoster*, and *erittenum tuberosum*. Romberg, Hoysselden, Rayer, and Cullerier, think that the cutaneous eruption of cholera bears analogy to the measles. Alibert found that the eruption occurs sometimes at the commencement, and in other instances at the termination of the disease. The granules, he states, are round, of limited elevation, and of the size of very small millet seeds. They are highly prurigenous; are more frequently found on the chest, face, and superior extremities, and are common among females. These granules are probably produced by the same cause as those found on the internal surfaces; and if they are not as frequently observed on the skin as on the mucous membranes, the difference must be ascribed to the delicacy of structure of the latter, and the comparative toughness of the former.

10th. The sweating sickness which prevailed at the same time with cholera in several towns of France, evidently depended on the same cause as the latter. The eruption which, in cholera, generally appears on the internal surface, manifested itself in the other disease on the skin, in consequence of the irritation produced on that membrane by the insects, being rendered greater by the softened condition of the latter, occasioned by the perspiration with which the patients were affected. In cholera, the formation of the pustules, and the concentration of the sero-mucous fluids take place on the internal surface, whence arise the vomiting, diarrhœa, dry skin, &c. In the sweating sickness, on the contrary, the movement of the fluids is centrifugal, whence result the profuse perspiration and other symptoms which characterize that disease.

We have now offered an outline of Dr. Mojon's views relative to the cause of cholera, and stated briefly the facts and arguments by which he endeavours to sustain them. We ought, perhaps, next to offer his sentiments on the subject of quarantines, sanitary cordons, &c. But by so doing, we should extend this article much beyond its proper limits. Besides, we have already mentioned his opposition to the doctrine of contagion; and this taken in conjunction with his views relative to the cause of cholera, will be sufficient to indicate, that in his opinion, those precautionary measures are not entitled to any confidence.

The following remarks, however, in consequence of their having a bearing on the doctrine he upholds, may, with propriety, be introduced in this place.

> "The supporters of the doctrine which refers all contagions to organic living creatures of the family of insects, or to very minute parasyte worms, will probably refuse to adopt my opinion respecting the non-contagious character of the Asiatic cholera. But I wish them to remark, that my sentiment differs from theirs only in this, that cholera appears to me to arise from the action of winged monads, transmissible or transportable, by means of the atmosphere, to very great distances; while the insects which produce diseases of a strictly contagious character are not supplied with wings, and are consequently incapable of being transported except by means of solid bodies, to which they attach themselves, and through the medium of which they can transmit the contagion. Admitting this, we shall be led to regard miasmatic diseases as the effect of winged insects, and non-miasmatic maladies as the result of other insects destitute of wings. The first require, in cities, precautionary measures of an hygi-

enic character only, while the second call for quarantines, sanitary cordons on the frontiers, isolation," &c.

We need hardly remark, that the arguments adduced by Dr. Mojon are conjectural, and that though they may, to a certain extent, lend assistance to the establishment of the animalcular doctrine, they do not place it beyond the reach of doubt. Nor can we say much more of many of his facts. Some of them do not appear to be sufficiently well-authenticated to merit the confidence he bestows upon them; others are merely conjectural, or have been contradicted by subsequent experience; while others again have a very slight bearing on, or a very distant analogy with, the question under consideration. Those which relate to the prophylactic and medical treatments of cholera must be viewed as particularly objectionable; because experience has taught us to place greater reliance on the means he represents as only useful to combat secondary symptoms, and to reject most of those on which he is disposed to depend for the treatment of the disease, or for guarding against its attack. The deduction drawn from the greater disposition, in alimentary substances, to assume the putrefactive process, is of no avail, because the fact has been disproved by subsequent experiments. And as regards that drawn from the diseases of animals and trees being produced by insects, it may be remarked, that in all the instances of the kind which are on record, the presence of the latter was *proved*, by ocular demonstration, not inferred, to have been the cause of the mischief; and until an equally satisfactory proof of their existence in the atmosphere during the prevalence of cholera is offered, their agency in the production of that disease may admit of some doubt.

Notwithstanding this, however, we must once more express a favourable opinion of the industry, ingenuity, and taste displayed by the author in the collection of his materials and the preparation of the present essay—of the great learning he has manifested, and of the variety of interesting information he has embodied in a narrow compass. If ever the animalcular doctrine becomes predominant, Dr. Mojon may justly pride himself on having greatly contributed to that result. We have said, that so far as we are able to judge, the doctrine in question has not yet been proved to be entitled to the entire confidence of the profession. But while saying this, we repeat, that we are far from joining in sentiment with those who regard it as merely fanciful, and even as absurd and unworthy of notice. Unfortunately no theory heretofore proposed to account for the production and phenomena of cholera can be regarded as free from objections, and to the partisans of one doctrine, the others appear just as fanciful and ridiculous as the animalcular theory may appear to its opponents. A careful examination of those various theories will, we have no doubt, show the correctness of Dr. Mojon's opinion; an opinion which by the way has also been expressed by a distinguished physician of this country, Professor Drake of Cincinnati, that the animalcular theory will serve to explain several points in the history of the epidemic, quite as successfully as, if not better than, any of the more generally received ones. This circumstance, though it may not be sufficient to insure to the doctrine in question a preference over every other, must necessarily, and independently of the fact that it is supported by several distinguished writers, entitle it to great respect in the mind of every reasonable and unprejudiced physician. L.

XXIII. *Pétition Adressée a la Chambre des Députés.* Par N. Chervin, Membre Titulaire de l'Académie Royale de Médecine, à l'effet d'obtenir que les résultats de l'enquête officielle que le Gouvernement a fait faire aux Etats-Unis d'Amérique, sur la conduite de ce médecin, sur son caractère moral et sur la question de la contagion ou de la non-contagion de la fièvre jaune, soient publiés aux frais de l'administration, ainsi que les lettres ministérielles qui ont provoqué cette enquête; et surtout pour appeler l'attention de la Chambre sur la nécéssité d'une prompte réforme dans notre système et notre législation sanitaires; Suivie des Pièces a L'appui, et du Rapport fait a la Chambre, par M. De Montepin. Paris, 1833.

The present volume, which we have recently received, affords another proof of the untiring perseverance of the author, in the prosecution of a point to which he has already devoted a large portion of his life, and sacrificed his fortune. It shows the violent opposition which truth has often to encounter, in quarters where it is least to be expected, and of the extraordinary, we had almost said reprehensible means to which men of honourable character and standing have sometimes recourse for the purpose of securing the success of their own views, or baffling the efforts of their opponents; though those efforts may have for their object the predominance of an opinion founded on the most indisputable facts—the abolishment of restrictions established in times of ignorance and arbitrary rule, and as a natural consequence the welfare of mankind generally. With Mr. Chervin's former writings, with the vastness of his researches, the conscientious manner in which he conducted them, and the difficulties he has had to encounter in France, from some interested individuals, as well as from the government—itself interested in upholding the doctrine of contagion, we do not intend to occupy our readers, presuming as we do, that they are for the most part already acquainted with them through the medium of this journal, and of other publications. Our object is merely to call attention to the unhandsome manner in which the labours, sacrifices and zeal of that eminent physician have been rewarded by the government of July, from the members of which a more liberal and honourable conduct might very naturally have been expected.

Overwhelmed by the innumerable and unanswerable facts, and the force of the arguments adduced against the doctrine of contagion and the sanitary measures based upon it, by Mr. Chervin and other physicians; refuted on every point, and fearing lest they not only should lose the sanction of the public, as they had already lost that of the profession generally, but be soon deprived, if the views of their opponents prevailed, of the lucrative offices they held, the partisans of contagion and of the quarantine system, devised a means which they considered, no doubt, as their last resort, and flattered themselves would turn the cards completely against the formidable champion of non-contagion, reduce him to silence, and thereby insure to themselves a complete triumph. This was no more nor less than to impugn, if possible, the veracity and moral character of Dr. Chervin, by appealing to his acquaintances in this country, and to collect further documents in the hope that they might be opposed to those he had obtained, and be calculated to neutralize, if not to destroy completely, the effects produced already by, or that were naturally to be expected from the latter. With this view, the government of Charles X. directed the consuls residing in the United States to collect the testimony of physicians individually, and of medical societies on those various points. This was immediately attended to. The reports of these officers were forwarded in due time, but their nature, their arrival in France, and the very circumstance of the inquest having been made, would probably have remained for ever unknown to Dr. C. or his friends, had not the medical society of New Orleans ordered a copy of the report presented to the consul of that city, to be forwarded to that gentleman; and had not copies of two letters addressed to the government by the consul of New York been procured in this place, and sent to him with full authority to make use of them in the way he should judge to be most advantageous.

When at last the existence of those documents was thus ascertained, Dr. C. could not help being tranquillized both as regards the doctrine which he so ably and triumphantly defends, and his own reputation. So far indeed from having reason to apprehend any injury from the result of the inquiries that had been made in this country, the few documents handed to him were of a nature to make him exult, and the silence that had been, and continued to be, preserved by government, relatively to the inquiry and the reports received, plainly indicated that nothing had been learnt, calculated to impeach his veracity, or capable of being made use of in favour of the doctrine of contagion. Fearing, however, lest the knowledge of such an inquiry having been set on foot in their official capacity by the consuls of France, might lead his friends and the profession at large in the United States to conclude, that his moral character was not held in high esteem in his own country, and being persuaded, from such of the documents forwarded to government as were placed in his hands and from other circumstances, that the publication of the whole series would tend to confirm the correctness of the views he had so long sustained, Dr. Chervin made several applications to that effect to the ministers of Commerce and of the Interior; but to no purpose. The publication of the documents was refused, on the ground of want of funds, of uselessness, of inexpediency, of fear to appear to lean on one side of the question, &c. A correspondence arose on that subject, between the ministers and Dr. Chervin, by whom all the reasons alleged by the former were completely refuted, and the expenses offered to be defrayed out of his own funds. Notwithstanding all his efforts, however, the ministers persisted in their refusal, and Dr. Chervin had no alternative left than to give up the affair, or to claim redress from the chamber of deputies. As might be presumed, from the known firmness of his character, he preferred the latter course, and consequently drew up a petition, which met with better success than his opponents had probably anticipated.

In this petition, which it would be impossible for us to analyze minutely in this place, Dr. Chervin shows very plainly, that the object of government in withholding the documents in question, was to avoid the impression in favour of non-contagion which they were likely to produce in the minds of the public; that the fear of appearing to lean in favour of one doctrine more than another, was a paltry excuse, inasmuch as government has always lent its aid to the contagionists—that the assertion of want of funds was ridiculous and unfounded; that there was no reason for keeping the results of the inquiry concealed; and that such of those documents as relate to the contagious or non-contagious character of the yellow fever—to his conduct while in this country, and to his moral standing being of a nature calculated to hasten very powerfully the solution of the question in debate, should, for that reason, and independently of other considerations founded on a sense of justice towards himself, be made public with the least delay possible.

But Dr. C. does not limit his demand to the publication of those documents,—he endeavours to prove to the chamber the necessity of a prompt reform in the sanitary system and legislation of France. The portion of his petition appropriated to this subject, contains a very strong body of facts and of arguments in favour of such a reform and in opposition to the system at present in operation, and would be entitled to great attention in every country where quarantines are resorted to for preservation from diseases really, or supposed to be, contagious. After remarking, that the diseases against the importation of which sanitary measures are adopted in France are small-pox, typhus, leprosy, cholera, yellow fever and plague, he shows the inutility of the measures adopted in reference to some of these, and their inadequacy in reference to others. Admitting the contagious character of small-pox in every case, and of typhus under certain circumstances, Dr. Chervin remarks, that vaccination should be made obligatory on every individual, and that when this is effected, there will be no necessity for quarantining vessels containing persons labouring under the former of those diseases; and that the extension of typhus is much more effectually prevented by disseminating the patients, and paying due regard to cleanliness and ventilation, than by seclusion and isolation. The contagious character of leprosy he very properly denies, and concludes, that so far as relates to that disease, the sanitary system at present in force in France, can be of no sort of utility. He shows that in its application to spasmodic cholera, the same system can be of no avail, inasmuch as the disease is not proved to be contagious, or at least has heretofore baffled all attempts to arrest its progress by means of quarantines, isolation, &c. As regards the yellow fever, Dr. Chervin is of opinion, that that disease, though governed by very different laws from cholera, is as evidently refractory as the latter to the means of seclusion employed with the view of preventing its extension, and hence thinks that the government, in order to convince itself of this fact, should direct an examination to be made of all the facts, for and against, which the science possesses on that subject. He remarks, that the question of the contagious and non-contagious character of the plague is not yet settled, though the majority of European physicians, who have seen the disease, incline to the opinion that it is contagious and that in the uncertainty it is better to adopt precautionary measures. Dr. C. while joining them in that sentiment, thinks that it is necessary to remove that state of uncertainty and to become enlightened on the point in debate. He states, that the opinion of the contagious nature of the yellow fever was long predominant, and yet has ultimately been proved to be totally unfounded. For the purpose of ascertaining the truth on that point, he suggests the propriety of resorting to experiments, in some of the lazarettos of France, with cloths or other articles procured for that purpose from the Levant, and offers to submit, himself, to any of the trials that may be deemed necessary for that purpose.

He demonstrates the danger resulting from the system actually in force—the inconveniences and expenses which the latter occasions to individuals concerned—the loss it occasions to commerce, and the increase of expense it causes to the state. He relates some of the heart-rending scenes witnessed in times of epidemics in this and other countries, and enumerates the baneful effects it occasions by causing consternation in the minds of the people, &c. The system of sequestration increases the mortality, by forcing people to dwell in an unwholesome and infected atmosphere, who might remain free from the disease, or recover more easily, if they were allowed to breathe a purer air; and it has but too often happened, that the authorities of a place have, while endeavouring to prevent contagion by lazarettos, sanitary cordons, &c. neglected the removal of local causes of insalubrity. Dr. Chervin shows the inutility of sanitary cordons and quarantines resulting from the ease with which they are eluded, and terminates by remarking, that the sanitary law of the 3d of March, 1822, inflicts capital punishment for different infractions of it, and that this severity could only be justified by a positive demonstration of the danger to which the violation of that law could expose society. But as there is great doubts respecting the reality of such dangers, it behooves the government to direct such experiments to be made, as may be required for arriving at a satisfactory conclusion on the subject.

This petition, which was presented to the chamber during the present session, was reported upon in the month of March. After giving an abstract of its contents, the reporter concluded by advising the reference of both sections to the minister, which amounts to nearly the same thing as ordering him to attend to the demands of the petitioner. To this proposition the chamber assented, so that Dr. Chervin may be considered as having gained his suite against the ministry and the contagionists. Whether or not the documents to which we have alluded will be published; whether or not the experiments recommended will be undertaken, matters not. The country will learn, from what has transpired, that the French government caused an official inquiry to be made in this country respecting the conduct and moral character of Dr. C. and the question of the mode of propagation of the yellow fever; and that the results of that inquiry has been entirely favourable to that gentleman and to the opinion he defends.

We cannot terminate this short notice without offering our sincere congratulations to Dr. C. on the results of a discussion which cannot fail to exercise a beneficial influence, by promoting the predominance of the doctrine he upholds, and causing, thereby, the abandonment of sanitary measures, which occasion incalculable detriment to commerce, and much vexation and expense to individuals, without giving rise to the least compensating advantage.

We must also congratulate the chamber of deputies for rendering justice to an honest, enlightened, and zealous individual, whose whole life may be regarded as one continued series of sacrifices and labours in the cause of science and humanity, and who heretofore has experienced from the government of his country an opposition and a treatment worthy of the darker ages, but little to have been expected in the nineteenth century, from the executive of a free, enlightened, and generous people;—whose publications have already served to lessen the expenditures of the country by proving the uselessness of the lazarettos which were about being erected for the purpose of shutting out the yellow fever, and by causing them to be abandoned; and who, if we except the premium he received from the Academy of Sciences;—his election at the Academy of Medicine—on both of which occasions he had to contend against the opposition of government; the cross of the legion of honour which he was presented with on the occasion of his being sent as one of the French commissioners to investigate the fever of Gibraltar in 1828; has received no return for the many and valuable services he has rendered his country and the world at large. Dr. Chervin is not perhaps destined to enjoy personally the gratitude of France; if so, he may confidently appeal to posterity, by whom full justice cannot fail to be rendered to him. "Truth like fruit must have time to ripen," and it may yet be long before the ruling powers there will be so far overruled by public opinion on the subject, as to abandon the useless system which weighs so heavily on commerce and on private individuals. Even in this country, where the minds of the medical profession is almost unanimously made up respecting the non-contagious character of the yellow fever; where government can have no interest in upholding the contrary opinion, and where every intelligent and well-informed individual must perceive the inadequacy of the present system—supposing the disease to be really contagious, we find that not only merchandise and vessels are quarantined, but that individuals themselves, whether they are affected with the fever, or have had it recently, or have only come from an infected district, are subjected to the same measures. If such a useless and even barbarous law exists here, it is not astonishing that it should be difficult to abolish in France, where few physicians have seen the disease, and become conversant, from personal observation, with its mode of origin and propagation; where public opinion is very far from being settled on the subject, and where the government is ever ready to defend any system which allows it the management of more public money, and confers upon it more power than it would otherwise possess. Already, however, a change has been effected in France—thanks, in great measure, to the labours of Dr. Chervin; the number of contagionists amongst physicians has greatly diminished; and the two first learned bodies in the country have shown that they, at least, appreciated the extent of the services he has rendered. The refusals on the part of the chamber to appropriate funds for the construction of additional lazarettos, and the recent vote of that body in reference to the petition before us, plainly indicates a diminished faith in the doctrine of contagion. Public opinion is beginning to be enlightened, and there cannot be the least doubt, that the time will come when the government will be compelled to cease its foolish and ill-founded opposition to the doctrine of non-contagion, and when Dr. Chervin's services will no longer be undervalued and sacrificed to the interest of a few flatterers and office-holders. L.

XXIV. *The Cyclopædia of Practical Medicine and Surgery, a Digest of Medical Literature.* Edited by Isaac Hays, M. D. Part I. Philadelphia, Carey, Lea & Blanchard. July, 1833.

Since the completion of the celebrated *Dictionnaire des Sciences Medicales*, medical dictionaries appear to have become quite popular with the profession in Europe. France has given birth to at least four or five, Germany to two or more, and England to an equal number. The Cyclopædia of Practical Medicine and Surgery, part first of which appeared a few weeks since, is the only publication of a similar character that has been attempted in this country. It has been commenced however under the most favourable auspices, with a list of contributors which affords a sufficient guarantee of the able manner in which the work will be conducted.

Availing themselves of the admirable exemplars presented to them in the European medical dictionaries, in preparing which the talents of some of the most distinguished medical men in France, Germany, and England, have been engaged, and of the ample materials furnished by the medical journals and other publications of this country in relation to the diseases peculiar to the several sections of the United States, and the treatment that has been found most successful in their removal, the editors of the Cyclopædia, whose talents and industry are well known, cannot fail to produce a work, equal to any that has appeared abroad, and in every point of view highly acceptable to the medical profession in America.

Works of this kind, by presenting a condensed view of the actual state of the medical sciences, both at home and abroad, embracing a vast fund of important information, collected from a thousand different sources, many of them difficult of access to, or perhaps even entirely beyond the reach of a large number of the profession, and in a form which, while it facilitates a reference to any particular subject, places the work, in consequence of its cheapness, within the reach of all, constitute a most important and valuable portion of the library of two-thirds of our practising physicians. It is in itself, when well-conducted, a complete "Library of the Medical Sciences."

Numerous, and a few, we confess, very serious objections, may be presented to all works of this class. These objections we feel no disposition, on the present occasion, to examine, either with the view of refuting them, or even weakening their force. Taking the profession as a body, such as we know it to exist in this country, however much we might desire that all its members should, in their search after medical knowledge, look to higher and more satisfactory sources, than such as are presented by the articles of a dictionary, or by any compendium however well executed, we must be convinced, that with the majority this is impossible. Hence every well-devised means for placing within the reach of these that kind of information upon the possession of which depends essentially their own usefulness, and the safety of the sick under their care, is a benefit conferred not merely upon this portion of the profession, but upon the public at large. One of the very best means that has as yet been devised to effect this important object, next to the periodical journals devoted exclusively to the medical sciences, is unquestionably such a work as the one announced at the head of this article. Through its pages the reader is made acquainted with all that is now known in relation to any given subject, up to the period of its publication, while the journals of the day keep him fully informed of each subsequent fact or improvement.

The first part of the Cyclopædia of Practical Medicine and Surgery contains one hundred and eight closely printed octavo pages. The principal subjects comprised in which, are *abdomen, abies, abortion,* and *abscess.* In the article abdomen are considered the general, surgical, and abnormal anatomy of that cavity; its physiology and general pathology; wounds, contusions, and ruptures of its parietes, abnormal adhesions between different portions of its internal surface; effusions, foreign and loose bodies and tumours within it; encysted dropsy, phlegmon, abscess and fistulæ, &c. This article occupies nearly eighty-two pages, and is from the pens of Drs. Geddings, Hays, and Coates. In all its parts the article abdomen presents a very favourable indication of the manner in which the work will be conducted throughout. The same remark may be made in reference to the article abies by Dr. Wood. The article abortion, so far as regards its causes, symptoms, treatment, and prevention, is from the pen of Dr. Dewees, while the medico-legal consideration of the same subject is by Dr. R. E. Griffith—both are most admirable digests—the first is a truly practical paper, the latter equally so though in a somewhat different acceptation of the term. The article abscess by Dr. Harris is unfinished. So far, however, as it goes, the same general praise may be bestowed upon it as upon the articles which precede it. It presents an accurate view of the present state of our pathological and therapeutical knowledge in regard to the subject. We notice another useful feature in the present work, a definition, namely, of all those words now in general use, those formerly employed, and still frequently met with in medical writings, and especially of such as have been introduced by those writers who have recently advanced new and important views in relation to medical and physiological doctrines, and which are now exerting a powerful influence upon the science of medicine in Europe as well as in this country. D. F. C.

XXV. *A Practical Treatise on the Diseases of the Eye.* By WILLIAM MACKENZIE, Lecturer on the Eye in the University of Glasgow, and one of the Surgeons to the Glasgow Eye Infirmary. From the last London edition. Boston, Carter, Hendee & Co. 1833. pp. 719. 8vo.

This is unquestionably the most elaborate and best treatise on the class of diseases of which it treats, that has appeared in our language. It displays, on the part of the author, extensive research and considerable experience. The publishers are entitled to the thanks of the profession in this country, not only for its republication, but for the *manner* in which it is got up.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

PHYSIOLOGY.

1. *Preternatural Lactation.*—The following interesting case of preternatural lactation has been communicated to the Medico-Chirurgical Review, (July, 1832,) by Dr. Kennedy.—"Judith Waterford lives in the village of Thringston, on the Forest, between Ashby-de-la-Zouch and Loughborough, Leicestershire. At this time, (December, 1831,) she is in her eighty-first year, and though infirm, her constitution has singularly retarded the advances of old age.

"Through life, this woman has been the active and laborious inmate of a peasant's cottage; her person is short and well-proportioned; at one time she weighed about fourteen stone: her temperament is the neuro-sanguineous, distinctly marked. The peculiar circumstances of her history being extensively known in the district where she resides, she has been visited by many clerical, medical, and other curious inquirers.

"J. W. had two husbands. Previously to her first marriage, her menstrual secretion appeared at regular periods; it continued nine days usually, and was very profuse, but preceded and accompanied with little pain or disturbance of the system. After this went, it returned only nine times, at distant and irregular intervals; and on each of these occasions it was abundant, without causing any perceptible diminution of her milk.

"J. W. was first married in 1777; her first child was born in May, 1778; and from that period till May, 1825, her lacteous secretion never in the least subsided. Besides giving her breast freely and frequently to the young ones of her neighbours, she suckled six children of her own by her first husband, and eight nurselings; she had two miscarriages. Her first confinement was followed by an excessive uterine discharge, which continued three weeks and induced considerable debility. No infant, however vigorous, was ever nearly able to use her supply of milk; and, in consequence, she often had her "breasts drawn" to the amount of two quarts in a day; her belief is, that, in general, she could have suckled four lively children at the same time. Many attempts were made, even under medical direction, to suspend the secretion of her milk; but they all utterly failed. Her breasts often became tense and painful; and, for the removal of this state, she had them well rubbed with butter made from the cream of her own milk; this process was invariably advantageous. Sometimes about a pint of this cream was collected, and the butter it yielded was white, and soft as lard, with a sweet taste. Judy took much food, and seldom had recourse to medicine; it is her boast, indeed, that "she never paid a shilling in her life for doctoring, for the sake of her health;" her bowels generally were torpid, often constipated.

"J. W. was a widow nearly three years, and gave suck to her own and other children during the whole of that period. She had one still-born child to her second husband. Her breasts even now retain a size quite extraordinary, and the axillary glands are occasionally large. Soon after the disappearance of her milk, in 1825, her health became more variable, her energies gradually failed, and her voice, which still is strong, lost its natural strength. Her actual powers of mind seem to have experienced little change; she continues "heart-whole;" her appetite is considerably impaired; she wishes to eat often, but takes little food at one time; her sleep is disturbed and unrefreshing, and a cough gives her occasional annoyance; her pulse is full, soft, not quick, and resistant. For many months, she has been slightly troubled with those periodical disturbances by which menstruation is preceded.

"Although Judy's milk ceased, for a time, in 1825, it repeatedly appeared in minute quantities during the five subsequent years; but, since the Autumn of 1830, the secretion of this fluid has been constant, and, if encouraged, (she thinks,) would be sufficient to nourish a child; from attempting this, however, she is deterred by the idea, that "it would soon be the end of her."

"December 6th, 1831.—This day, being in the middle of her 81st year, Judy readily filled a small spoon with her milk, by squeezing her left breast frequently with the hand. The milk was rich and sweet, and not different from that yielded by young and healthy mothers.

"Here, then, are the remarkable circumstances of a woman who menstruated during lactation—who suckled children uninterruptedly through the full course of forty-seven years—and who, in her eighty-first year, has a moderate but regular secretion of milk."

2. *Doubling of Images by a single Eye.*—Prevost gives an account of his examination of his own case, in which the right eye especially affected with the defect, and some details of the case of Mr. Babbage, who is similarly affected. In a note, one of the editors of the *Annales de Chim.* (M. Arago, we presume,) states that he labours under a similar defect, but with certain modifications, which he promises to detail. The scope of the above observations seems to connect them with the doubly refracting structure observed in the lenses of animals by Sir David Brewster.*—*Ann. de Chim. Oct.* 1832.

PATHOLOGY.

3. *Aromatic Smell Exhaled from the Surface of the Skin of the Forearm.* Observed by Dr. Speranza.—M. T. R., of sanguine and bilious temperament, robust constitution, ætat. 30, after having worked very hard an entire day, perceived, while he undressed, that there exhaled from the internal surface of his left forearm, near the hand, a sweet odour, of very decided character, somewhat like Peruvian balsam, or the vapour of amber, or benzoin when burned on heated coals. Astonished by this singular circumstance, which he was totally unable to explain, having touched no aromatic substance, he came at once to communicate it to his medical attendant. Dr. Speranza found the odour so powerful that he could not avoid suspecting a trick, and several other persons coïncided in this opinion. The most scrupulous investigation, however, showed at once that there was no deception practised.

Various attempts were made by means of frictions and lotions to dissipate or neutralize the odour, but in vain: the smell only increased the more the arm was rubbed and excited. It was particularly strong in the morning just after the man got up, but it continued without intermission the entire day. It was perceptible at a considerable distance from the arm, and even impregnated sensibly the chamber where he slept. Frictions on other parts of the body did not occasion any similar exhalation. When rubbed in the dark with appropriate substances, the arm manifested no signs of electricity. This strange affection continued for two months, when the patient underwent a violent attack of fever; on the first symptoms of which the odour entirely disappeared, and did not return either during the illness, or on the patient's recovery.

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* Brewster's Optics, p. 205. Am. Ed.

Professor Speranza adds a number of analogous observations, already published by various authors, but no plausible explanation of the extraordinary circumstance can be obtained, either from the cases themselves, or the commentaries of their narrators.—*Lancet, from Annali Universali di Med. Sept.* 1832.

4. *Accumulation of Fæces in the Colon.*—We transfer to our pages, from our esteemed cotemporary, the *London Medical and Surgical Journal*, the following interesting remarks on this subject, taken from a clinical lecture by Professor GRAVES.—A young woman was admitted into Meath hospital, Dublin, labouring under symptoms of abdominal irritation, with great distention of the right hypochondrium, in which we could feel a large tumour, capable of being traced up under the ribs, and assuming the appearance of an enlarged liver. Its outline, however, was irregular, and its surface uneven, though it went up under the ribs, and seemed to be continuous with the liver. The woman, too, was young, and there was nothing about her which could induce us to suspect the existence of an hepatic affection. I was inclined to think it a case of fæcal accumulation in the colon, and it proved to be such. These accumulations frequently simulate organic disease of the abdominal viscera: Mr. Crampton and I attended a lady who had a tumour commencing in the right iliac region, and gradually increasing until it occupied nearly the whole abdomen. We examined it, and considered it to be disease of the ovarium. During the course of Mr. Crampton's attendance, she experienced great irritation about the anus, and Mr. Crampton was induced to examine the state of the rectum. He introduced his finger, and found it impeded by something hard, which proved to be indurated fæces. We employed injections, and removed a bucket-full of fæces in the course of two days. An accumulation in the colon had taken place, and we took it to be disease of the ovarium. Now, this lady had been in the habit of taking an aperient three times a week, and stated that she had a discharge from her bowels almost every day for the last three years. Still the fæcal matter had been accumulating; and, you perceive, that it may go on in this way for a very long time with a kind of passage through the indurated portion, by which a small and fluid portion escapes, while every day an addition is made to the original mass lodged in the distended sacculi of the gut, until it attains a magnitude which excites attention and suspicion of organic disease.

Five years ago, Dr. Marsh and I were called to see an old lady in Bagnal's Town, near Carlow, who had long been tormented by a severe and intractable dysentery, complicated with a perceptible tumour in the abdomen. All our efforts to afford her relief were useless, and her case was looked upon as quite hopeless, when she passed a large lump of a substance hard as stone, and which consisted of calcined magnesia cemented together by animal matter. She had for years been in the habit of using magnesia as an aperient. After this mass was voided, all the dysenteric symptoms ceased, and the old lady has since enjoyed excellent health.

5. *Roseolous Eruption, caused by the Use of Copaiba and Cubebs.*—A young man, who had formerly had syphilis, for which he had never been regularly treated, was received into la Pitié, under M. VELPEAU, for the treatment of an abscess of the abdomen, and a recent gonorrhœa. He was ordered a mixture of copaiba, cubebs, and magnesia; and after having taken it for six days, he began to experience a troublesome itching and burning over the whole head and front of the neck. The next morning there was a full eruption of roseolous patches over his body. These patches were scarcely at all elevated, of various sizes, irregular, some confluent, others distinct, and of a bright red colour; they

very much resembled the rash of measles. By discontinuing the medicine, and keeping the body cool, the eruption began to disappear on the third or fourth day. Three weeks subsequently, the patient having taken another dose of the same medicine, the eruption reäppeared.—*Archives Générales, Nov.* 1831.

6. *New Theory of the Sounds of the Heart.*—Dr. Rouanet, in an ingenious thesis, explains the phenomena of the two sounds in the following manner. The first, or dull sound, is produced by the shock, or impulse of the tricuspid and mitral valves against the auriculo-ventricular orifices, and this shock is caused by the pressure of the blood on the valves during the contraction of the ventricles. The second or clear sound arises from the succussion of the blood in the distended aorta and pulmonary artery, backwards upon the semilunar valves, during the dilatation of the ventricles; the author considering that at this moment, there is a tendency to a vacuum in the ventricle, and that therefore there must be a strong impetus, or rushing back of the blood upon the closed semilunar valves.

The first sound is heard at the commencement of the ventricular contraction; hence the idea that the sound was owing to the contraction of these cavities; and as the sound is momentary, it has been believed that the systole of the ventricles is also of the same brief duration. The cause of its being duller than the second sound is, that the tricuspid and mitral valves are larger, and that the parietes of the auriculo-ventricular apertures are thicker than the semilunar valves and the coats of the aorta and pulmonary artery.

The pulse is not quite synchronous with the first sound, but follows immediately after it. To explain the cause of this, we must remember that the tricuspid and mitral valves close at the very commencement of the ventricular systole, whereas the blood is not entirely expelled till the contraction is over. Such, however, is the rapidity of the contraction, that the second sound is heard almost immediately after the first. The second sound is more clear and sharp than the other, because the valves, by the shock of which it is produced, are smaller and thinner, and because the parietes which transmit the sound are more sonorous than in the former case.—*Med. Chirurg. Rev. from Journ. Hebdom. No.* 97.

7. *Spontaneous Ruptures of the Heart.*—When an ordinary muscle becomes ruptured, the rupture takes place almost always in a transverse direction; in the heart, on the contrary, a longitudinal rupture of the fibres is much more common than a transverse one. In forty-four cases, out of fifty-four of fatal rupture of the heart, the perforation was found in the left ventricle; in eight, the right ventricle was the seat of it; and in the other two, it had taken place between the two auricles. The thickest parts of the ventricles were ruptured in forty-five of the cases; and the interventricular grooves in seven cases only. The ruptured cavities were dilated and attenuated in seven cases; and appeared to be normal in structure in the remainder, except in three of them, where the parietes seemed to be partially or locally rendered thinner in substance. If to the thirteen cases of general ramollissement of the affected organ, be added twenty-seven cases in which morbid alterations of structure, varying, indeed, as to degree, but all tending to a solution of continuity, were observed, and nine cases in which the special alteration is not mentioned, we shall find that the opinion of M. Rostan, that almost all cases of rupture of the heart are spontaneous, is far from being correct. Equally remote from truth is the assertion of M. Bland, that the almost exclusive cause of this fatal accident, is a gelatiniform softening of the heart's substance: there are many other morbid changes besides this ramollissement. To recur to the comparative frequency of transverse and longitudinal rupture of this organ, it appears that thirteen were of the former description and thirty-six of the latter, or in a direction parallel to the muscular fibres.

The difference of the direction is probably attributable to the nature of the preceding morbid change of the texture, and to the manner in which it is generated; hitherto it has been a very common mistake to regard transverse rupture of the heart as quite analogous in its etiology to a transverse rupture of other muscles, such as the gastrocnemii; but this is erroneous, for, in the one case, a morbid change always, and, in the other, seldom or never, precedes the accident. In ruptures of the heart, as in aneurisms of the vessels, the parts have almost always been found diseased in the first instance; and the diseased depositions are either of an atheromatous, steatomatous, tubercular or cancerous nature. In some cases the rupture is incomplete, affecting only a certain set, or stratum, of the muscular fibres, and not penetrating through the entire thickness of the parietes. It is not improbable that, in many such cases of internal incomplete rupture, the membrane which lines the cavities of the heart may be burst at first, but afterwards may be renewed and impaired, so that the case may be regarded, on the autopsy, as one of simple general dilatation of the cavity, and not as originally a rupture of its parietes. If this idea prove correct, it will follow, that the number of internal ruptures of the heart is nearly equal to that of the external ones.

M. Cruveilhier says that a muscular apoplexy of the substance of the heart is one of the principal causes of rupture; but M. Pigeaux thinks that the morbid change, so designated, ought to be viewed rather as subsequent to, and an effect of, than the cause of lacerated fibres; the rupture, indeed, may not have been complete before the sanguineous effusion and infiltration, but probably takes place only in some of the muscular fasciculi. Another argument against the belief, that ruptures of the heart are analogous to ruptures of other muscles, and are caused by the force of the ventricular contractions, is, that these accidents are very rarely seen to occur in the auricles, and yet the force of their contractions is fully as great, in proportion to their thickness and strength, as those of the ventricles.

It is very probable that, when rupture of the heart does happen, it takes place rather at the moment of its dilatation than of its contraction; the shock and impulse of the blood, as it rushes in upon the softened and diseased part, operating as the immediate agent. This explanation accounts for the extreme rarity of rupture of the auricles, because, in them, ramollissement seldom occurs, and the rushing in of the blood is comparatively feeble; and we now no longer are surprised at the rupture of the ventricle being so frequently in a direction parallel with its muscular fasciculi.

Hitherto it has been too much the case to attribute dilatation of the cavities of the heart to some obstacle, or impediment, to the free flow of the blood from them: such was the opinion of Corvisart; but of late years, M. Pigeaux has called its correctness in question; and, after a most studious examination of the subject, has arrived at the following conclusions:—1. Dilatation of one or more of the cavities frequently occurs, without any contraction of their orifices. 2. Contraction of the orifices often is found, without any dilatation of the cavities. 3. The condition of the lungs has very little influence on the state of the right ventricle, (this is proved by the fact stated by M. Louis, that out of one hundred and five cases of phthisis, dilatation of the right side of the heart existed only in three,) and, therefore, â fortiori, the state of the left ventricle is still less influenced by that of the right one. 4. The impulsion of the blood is the efficient cause of dilatation. 5. The mechanism of the formation of cardiac aneurisms is quite similar to that of the formation of arterial aneurisms. 6. The force of the ascent in the veins, and ingress of the blood into the auricles, (a force which exerts a pressure equal to that of several atmospheres,) compensates for the absence of, and is nearly equivalent in force to, the strong impulsion of the blood into the ventricles. 7. The weight of the blood which remains behind in any cavity, after its systole, may frequently coöperate, with the impulsion of it to give rise to dilatation. 8. A change in the firmness of the parietes of the heart is by far the most common disposing cause of dilatation. 9. Any mechanical impediment to the free egress and course of the blood, must favour and aggravate the effects of its impulsion.—*Ibid. from Journ. Heb.* 104, *and Révue Med. Sept.* 1832.

8. *Curious Malformation and Organic Disease of the Heart.*—A female, aged twenty-five years, was attacked with typhus fever in 1824. On the seventh day of the disease, she suffered much from violent palpitations, which lasted for several days, then ceased for a time, and again returned at intervals; distressing vomitings existed at the same time, and in the progress of the fever, delirium, cough, miliaria, gouty pains and œdema of the feet supervened. After the lapse of five months, during the greater part of which time she had been so afflicted with dyspnœa and palpitations that she could walk only at the slowest pace, a violent hæmoptysis came on. By depletion she recovered, and the dyspnœa and palpitations were abated; but every now and then they returned with great severity. In February, 1827, the catamenia were suppressed, and a general breaking up of her health ensued. She died five months after this period, and three years and a half after the attack of typhus. For some time before death, the palpitations had become most afflicting, and were always accompanied with vomiting; the voice also was lost.

On dissection, the heart was found flabby, and devoid of a right auricle; in its place was a venous canal, an inch long, and an inch and a half wide, which extended from the heart to the junction of the two venæ cavæ; the only trace of the sinus venosus was a small portion of the septum, but there was a more considerable vestige of the auricular appendage; its size was about that of a large pea. Where the venous canal was united to the heart, a circular ridge marked the place of the tricuspid valve; the opening, however, was so large, that the canal, and the upper portion of the right ventricle, formed but one continuous cavity; the lower portion of this ventricle was separated from the upper by transverse fleshy pillars, so that there was an upper and a lower cavity in the right ventricle; the pulmonary artery was considerably enlarged; the left side of the heart was of small dimensions, but of normal structure; the lungs were studded with tubercles.—*Ibid. from Hufeland's Journ. July,* 1831.

9. *Case of Hydatid Cyst within the Cranium.* By H. Montault.—A man named Girard, æt. 33, a weaver, having worked a long time in a low and damp situation, and been, consequently, exposed to rheumatic affections, about three years since experienced extreme pain at the posterior and lateral part of the left side of the head. Having lasted fifteen days, the pain then extended to the corresponding side of the neck, causing sleeplessness, and embarrassing the movements of the head, accompanied by trembling and shooting of the muscles of this region. According to the patient's statement, these pains followed closely on an accident, he having struck the back part of his neck on falling down a long flight of stairs. To the pain soon succeeded a difficulty of enunciation, but there was no symptom of paralysis of the left side of the face. The application of leeches, &c. procured some abatement of the pain, which disappeared even at the end of a year, but soon returned, (less severely,) and thus continued until September 1831, when it became much more intense at the upper and back part of the neck, so as completely to preclude any movement of the head. In October of the same year, he was admitted into the Salle Saint Marthe, under the charge of M. Dupuytren, who at that time made the following remarks on his condition:—The movements of flexion, whether lateral or antero-posterior, are partly executed by the entire of the vertebral column. The tongue is diminished in volume, and atrophied at its left side alone; more so at the point and middle than at its base. This circumstance the patient noticed from the commencement of his illness. The right side of the tongue seemed larger and stronger than usual. The left side was reduced almost to the thickness of its mucous envelope. The articulation of sounds, difficult at first, was now clear and distinct—a circumstance apparently more the result of exercise in speaking, than of a diminution of the disease. By suc-

cessive applications of four different substances—sugar, sulphate of quinine, muriate of soda, and acids dissolved in a small quantity of water, any changes which might supervene in the sense of taste were carefully noted. The results of these experiments, previously performed on healthy persons, left no doubt that tastes were perceived by the left side of the tongue.

Proceeding by the mode of exclusion, it was easy to conclude, that of the three nerves distributed to the tongue, the hypoglossal, glosso-pharyngeal, and lingual, that of the ninth pair, the hypoglossal should necessarily be altered. The absence of general paralysis, contractions, convulsions, or deranged intelligence, moreover, led M. Dupuytren to admit a lesion of this nerve at its exit from the skull, and not at its origin. As to the nature and species of this lesion, M. Dupuytren suspected that a chronic and rheumatic engorgement of the ligaments uniting the first vertebra and the occiput, might have compressed, or altered, the tissue of the hypoglossal nerve, which escapes by the anterior condyloid foramen. He thought, also, that below the point of its exit the nerve was only atrophied, whence the corresponding paralysis and atrophy of the left side of the tongue.

In a month after this the man left the hospital, but returned again in a few days; again, however, he went home, and a third time returned to the Hôtel-Dieu, (in December 1831,) when he was received into M. Gendrin's wards* in a state much worse than before. On February 14th, 1832, he was somewhat better; no pain in the face, but much in the neck, especially behind the ears, on a level with the posterior and lower part of the mastoid apophyses, and occasionally seeming to follow the nervous filaments of this part. The patient now stated that all his senses were perfect, but that the venereal appetite had sensibly declined for the past three months. On the 10th of February, the experiments of M. Dupuytren on the tongue were repeated, and with the same results. The patient now complained that he occasionally experienced peculiar sensations of trembling, of sharp blows on the skin at both sides, on the shoulders, abdomen, and cheeks. On the 24th of March he again left the Hôtel-Dieu, and returned to M. Rostan's wards on the 28th of the following September. Attentive examination was now made as to his condition, which we proceed to describe:—

Pain towards the occipital opening, extending to the third or fourth cervical vertebra, but permanently fixed on a level with the articulation of the atlas and axis, without swelling or alteration in the texture or colour of those parts. Behind the mastoid apophysis of the same side there is a small tumour of the size of a franc, elevated about two lines above the surface, almost circular, hard, slightly painful on moderate compression, not surrounded by a bony prominence—as we observe in cases of fungi of the dura mater, which have perforated the cranium. Very strong compression causes intense pain, which extends to the origin of the rachidian canal. The sonorousness and clearness of the voice are altered, but the pronunciation is not difficult. No cough or expectoration. The intellect intact, but the patient considers his memory gradually to have declined for the last month. Deglutition imperfect; fluids always penetrate the larynx in small quantities, but solids are swallowed without difficulty. Digestion good; slight constipation; urinary secretion normal. Some torpor of the left arm, but none in the corresponding lower extremity. The patient can, nevertheless, move the arm with perfect precision. No fever. M. Rostan now expressed his belief that the disease was a fungous tumour of the dura mater at the base of the brain.

From the 8th October the patient experienced hiccups; disgust for food; vomiting without any other symptom of gastritis; obstinate constipation. The hiccup returned on the least movement, and was in vain treated by the acetate of morphine. Fever also every evening. The disease now progressed rapidly, and, affected by sinister ideas, he left the hospital on the 6th November. On the 20th December he was received again under M. Gendrin's charge in the Hôpital Cochin. The following additional symptoms were then noted. Almost complete aphonia; diminished sensibility of the entire of the left side; scanty secretion of urine; general emaciation; skin dry; memory enfeebled. He is fatigued when questioned; appetite impaired; fever; and want of sleep.

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* We omit all details of treatment, &c. with which M. Montault has needlessly encumbered this valuable case, as they are destitute of the slightest interest.—Ed. L.

25th December. Voice weaker than ever; the lungs of the left side have become the seat of prickings and lancinations. Intense suborbitar pain; great thirst; tongue slightly red; deglutition of liquids more difficult; *involuntary* and *unconscious* discharge of urine and fæces; total loss of memory; pulse very frequent; skin hot. A confluent and aphthous eruption appeared in a few days after this, which was removed by detersive gargles. From the 1st to the 8th January 1833, there were cough and abundant expectoration, and considerable embarrassment of deglutition, but on the 8th January, this symptom suddenly increased to such a pitch, that the patient was threatened with suffocation every moment; the intellect was still intact. On the 12th January, after swallowing a few spoonfuls of bouillie, he fell back on his pillow and died. For several days before his death, some epileptiform paroxysms had been noticed, and deglutition became so difficult, that he spent entire hours in sucking up a spoonful of bouillie.

Examination of the Body twenty-four hours after death.—External Appearance. No cadaveric rigidity; considerable emaciation.

*Head.**—The pulp of the brain rather firmer than usual, and the ventricles dilated by a great quantity of serum. In lifting out the cerebellum, a cyst was perceived, (having whitish, opaque, slightly-resisting sides, about half a line thick,) in volume equal to a goose's egg, presenting manifest fluctuation. Being casually opened, there escaped a quantity of limpid serum, and a multitude of hydatids, perfectly sound, smooth, and transparent, varying in size from that of a grain of millet seed to a chesnut.

This cyst was placed between the left occipital fossa, the corresponding side of the basilary surface, the left hemisphere of the cerebellum, which it lifted up, and the rachidian bulb, which it pushed slightly to the right side. It adhered to none of these parts, which preserved the brightness of their arachnoid covering, even where in contact with the tumour, so that this seemed as if free in the cavity of that membrane. It penetrated to the depth of some lines into the rachidian canal, and on a level with this point, there proceeded from it a sort of appendix, shaped like the finger of a glove, penetrating the anterior condyloid foramen, and containing a hydatid. From the base of the cyst again proceeded another, still more remarkable, appendage, which engaged itself in the anterior portion of the left posterior foramen lacerum, and, turning from before backwards, after traversing this opening, as it passed behind the bundle of muscles known by the name of the "*Bouquet anatomique de Riolan,*" dilated into a bulbous form, as far as the superior extremity of the complexus and sterno-mastoid muscles. This second cyst, or prolongation of the first, had white, opaque, and soft sides. It was the size of a large nut, covered externally by a fibro-cellular fold, by the digastric muscle, the mastoid apophysis, and the superior extremities of the plexus and sterno-mastoid muscles. This, in fact, was the cyst, the presence of which had been ascertained during life, during the patient's treatment by M. Rostan at the Hôtel-Dieu. It contained numerous hydatids, and communicated with the intra-cranial cyst already described. The narrow structure by which they communicated corresponded with the posterior foramen lacerum.

It became of great importance to examine the nerves proceeding from the base of the cranium. The *lingual* nerves were perfectly *sound.* The glosso-pharyngeal and pneumogastric nerves of the left side differed in no respect from those of the right side, from their origin to their passage into the foramen lacerum posterius, but immediately after their issue from this opening, their condition differed individually. The hypoglossal nerve, or the ninth, also was unaffected from its origin to its exit from the foramen lacerum anterius, but from that point it was in a state of atrophy, reduced to the dimensions of a thread, two-thirds at least less in size than the nerve of the right side. This atrophy continued all along to the minutest ramifications among the muscles of the tongue. It appeared to be the result of the compression exercised by the little appendix sent off from the intra-cranial cyst through the anterior condyloid foramen. The glosso-pharyngeal, spinal, and pneumogastric nerves had also been compressed by the same cyst in the foramen lacerum posterius; however, the glosso-pharyngeal was the only one of these nerves which was smaller, (by one-third,) than those of the opposite side.

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* We omit from M. Montault's tedious and unnecessary details, every thing which presented no morbid deviation.—Ed. L.

The bones in contact with, or pressed upon by, the cysts here described, were absorbed to a considerable extent, as is seen in cases of aneurism pressing on bony parts.

Organs of Deglutition.—At the left side, the muscles, whether intrinsic or external to the tongue, were totally thinned, pale, atrophied; their fibres few, yellowish, and soft, having the aspect of a spongy tissue, devoid of the traces of their primitive organization. Pharynx nothing remarkable; œsophagus strongly contracted, but not altered in structure.

Organs of Voice.—Considerable quantities of bouillie in the larynx; considerable paleness of the larynx; *atrophy* of the left *corda vocalis;* trachea bright red, and its mucous lining swollen.

Thoracic viscera, heart, stomach, intestines, and bladder, quite normal. The hepatic veins much distended, and below the middle lobe there was a smooth white tumour, containing hydatids of variable volume. The vertebræ, spinal column, and its membranes, perfectly healthy.

Reflections.—It seems to me, that the best manner of illustrating the interest of this case, is by placing exactly in juxta-position with each other, the *symptoms* presented by the patient, and the *alterations* found after his death. The principal phenomena, then, which the malady of Gerard presented, were the following, in the order of their appearance:—

1. Pain at the posterior and lateral part of the left side of the head and neck. May we not refer this pain to the development of the external hydatid pouch, which must have compressed, from within outwards, the extremities of the complexus and sterno-mastoid muscles, and to the compression, by the internal cyst, of the spinal nerve in the posterior foramen lacerum?

2. Extreme difficulty of pronunciation, depending on a loss of power of movement in some of the muscles of the tongue. But what nerve was here concerned? The glosso-pharyngeal, which was compressed and diminished in volume. Charles Bell, as is known, has classed this among the respiratory nerves, giving us thereby to understand, that it contributes to movements in relation with the *external phenomena* of *expression* of the individual. M. Manec, in his plates of the origins of the nerves, has confirmed, in this respect, the researches of Charles Bell, by stating that this nerve concurs in the movements of the tongue in the *pronunciation* or *articulation* of sounds, while the movements in *mastication* are influenced by the great hypoglossal.

3. Paralysis and atrophy of the left side of the tongue, without loss of taste. The atrophy of the hypoglossal nerve, and the perfect state of the lingual nerve of the same side, will explain this two-fold circumstance. This fact, then, would prove also, that the trifacial by the lingual branch, presides over the faculty of perceiving or *tasting* flavours. Despite the great number of experiments undertaken to discover to which of the three nerves that distribute themselves to the tongue we are to attribute this property, definitive experiments have until lately been wanting; but at present they abound, so as to place beyond doubt that this property belongs to the lingual branch. The following facts prove this statement. The lingual branch of the fifth pair distributes itself

to the papillæ of the tongue. In the lower animals, in which only one organ of sense, and that the taste, is to be detected, the tongue is supplied by the branch in question. According to Casserius, Scarpa, Jacobson, Dumeril, Treviranus, Weber, Magendie, Serres, and De Blainville, the lingual branch may assist, replace, or act for the gustatory nerve. According to Galen, Willis, Vieussens, Rasseuer, Gall, and Belingeri, taste has also been referred to the same branch; and, lastly, in modern times, several experiments and cures have corroborated this opinion. By means of galvanism, indeed, MM. Dupuytren and Richerand have demonstrated the lingual to be the nerve of taste. The delicate experiments of M. Magendie, who paralyzed the sense of taste by cutting the fifth pair in animals, and the beautiful case related by M. Serres, in which taste was lost during an alteration of the trifacial, (a case by-the-by to which ours forms the counterproof,) concur in the same indications. This atrophy and paralysis of one side of the tongue, with *preservation of taste*, is, moreover, of high importance, since it confirms the law announced by M. Serres, and supported by Geoffroy St.-Hilaire, that every organ of the special senses receives two principal nerves, one which keeps up *the harmony* and *conservation of the constituent parts of the organ*, another which contributes directly to sensation, as *the conductor of the impression to the brain.*

4. Lesion of general sensibility, first in the left side, and then in both sides. I believe this to have depended on the compression by the internal cyst, either of the superior part of the medulla oblongata backwards, or rather of the mesocephalon, which the examination showed to have been much displaced.

5. Paralysis of the organs of deglutition. Explained by the compression and diminished volume of the glosso-pharyngeal nerve.

6. Loss of memory and weakened venereal appetite. These facts are interesting to those who regard the cerebellum as the seat of one or other of the two faculties, a part of it having been compressed by the cyst.

7. Torpidity and commencing paralysis of the left arm; obstinate constipation. This appears to me to be the result of compression on the upper part of the medulla, or medulla oblongata. It is remarkable, too, that all the functional troubles resulting from the compression, whether of the nerves or nervous masses, showed themselves always at the same side as the lesion of the nervous system described in the preceding columns; a fact which accords with our previous physiological knowledge, since the lesion occurred in a part of the nervous system placed below the origin of the nerves. This remark does not apply to the alterations of the general sensibility produced by the compression of the annular protuberance.*

8. Hiccup, aphonia, fall of food into the air-passages; death. All these events appear to me, as well as the atrophy of the thyro-arythenoid muscle, and of the left side of the velum palati, to have been produced by the same lesion, namely, the compression of the pneumogastric nerve in the foramen lacerum posterius,—death being immediately caused by the asphyxia produced by the food which fell into the trachea and bronchial tubes. I think so, because similar accidents follow the section of this nerve at a certain height, or even the section of some of its branches, such as the superior laryngeal and recurrent. It was thus that Galen observed the voice to be lost by the division of the recurrent; that Legallois, Desmoulins, and Dumas, have proved that asphyxia then takes place by occlusion of the glottis; that M. Cruveilhier has ascertained the extinction of the voice to have resulted from compression of the recurrent nerves by an aneurism of the aorta. Additional facts of this kind may be found in the writings of Galen, Picolhomini, Lower, Boyce, Willis, Valsalva, Haller, Dupuytren, Blainville, Brodie, Legallois, Dupuy D'Alfort, Magendie, Wilson Phillip, Dumas, Leuret and Lassaigne, Breschet, Milne Edwards and Vavasseur,

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* M. Montault here enters upon some ingenious speculations relative to the cause of the epileptiform accessions. They are, however, too purely theoretical, to be coupled with the preceding facts and deductions. Moreover, M. Gendrin believes the paroxysms to have been rather lethargic than epileptic.—Ed. L.

Abel and Hastings, Laboumes, Broughton, Bichat, Desmoulins, Tiedemann, Gmelin, and Sedillot.—*Lancet, and Journ. Univ. et Hebdom.* 31*st March,* 1833.

10. *Ulcer of the Stomach Cicatrized.*—Dr. Graves relates in the *Dublin Journal, No. V.*, an interesting case of this, occurring in a lady twenty-five years of age, who had suffered much from pain in the stomach, acidity, and indigestion. These symptoms first appeared after a severe shock and fright. She had sometimes intervals of five or six weeks at a time, free from complaint, but these intervals had lately become much shorter. She was pale and emaciated. She was free from pain for some months after Dr. Graves commenced attendance, then pain came on, attended often with a discharge of coloured fluid from the stomach, sometimes resembling coffee-grounds. This state continued for some months, when the pain and tenderness disappeared, though vomiting remained after every kind of food. She was at length worn out. On dissection, an ulcer was found in the neighbourhood of the pylorus, but completely cicatrized. It had penetrated the mucous and muscular coats, but had been arrested by the peritoneal covering, there was no maturation or scirrhus in the neighbourhood. The site of the cicatrix was distended into a kind of pouch, which received a portion of the contents of the stomach, and thus formed a kind of valve which prevented the egress of chyme through the pyloric orifice, nutriment was thus cut off from the system, and death was the result.

MATERIA MEDICA.

11. *Ergot.*—M. Boettcher, at Mendelurtz, in the duchy of Altenbourgh, believing that the different energy of various specimens of ergot might depend on the circumstance of its being collected before or after the cutting of the parent crop, obtained a quantity gathered before, and after the harvest. He sent the separate products to the minister of public instruction at Berlin, who remitted them to Dr. Kluge for clinical trial at the Maternité of that city. The substance was employed on fifteen females, all well formed, and with natural presentations. The following are his comparative results:—1st. The action of the ergot of rye collected before harvest is very energetic, while that collected after harvest is totally powerless. 2d. In many cases the remedy renders the forceps unnecessary, especially when the insufficiency of uterine force depends either on real atony, or on a spasmodic contraction of the neck of the uterus. 3d. The ergot gathered before harvest arrests uterine hæmorrhage. 4th. The dose is from thirty to sixty grains, administered in portions of ten grains every ten minutes.—*London Lancet, from the Allegemeine Medicin. Zeitung. Nov.* 10, 1832.

12. *Radix Caincæ.*—Recent experiments instituted by Dr. Wolff, at Vienna, do not warrant the praises that have been bestowed upon this remedy by François and others. Dr. Wolff has found in his practice its effects to be very analogous to those of the helleborus niger, exciting nausea, vomiting, purging, and that it is by no means a certain diuretic.

13. *On Ergot.*—An admirable essay on the use of ergot of rye in menorrhagia and metrorrhagia, has just been published in the *Bulletin Général de Therapeutique*, by MM. Trousseau and Maisonneuve. We subjoin the conclusions they deduce from their observations, together with a tabular epitome of the cases from which they reason. These researches deserve the deep attention of all practical men.

"*Conclusions.*—From the preceding facts we deem ourselves entitled to conclude—

"1. That the ergot of rye exercises on the uterus a powerful, but transitory action.

"2. That this action chiefly concerns the fibres of the organ, and determines their contraction.

"3. That these contractions, constantly accompanied by pains, put a rapid stop to menorrhagic discharges, on whatever cause they depend.

"4. That the state of the uterus in no respect influences the production of the pains.

"5. That the pains are observed even when a part of the neck of the uterus is affected with cancer.

"6. That the ergot of rye acts on the centre of the nervous system as a narcotic.

"7. That the resulting phenomena are slow but durable.

"8. That they are never serious or dangerous when we confine ourselves to combat the menorrhagia.

"9. That the dose may, without danger or inconvenience, be carried to several drachms in the course of four or five days.

"10. That in the treatment of menorrhagia, divided doses, given at equal intervals, are to be preferred.

"*Lastly.* That we need be under no apprehension of commencing with a drachm dose, divided during the first twenty-four hours.

Tabular Epitome of the Principal Circumstances of the Facts contained in the Body of the Memoir.

Cases.	Age.	Number of Children, or Miscarriages.	Duration of the Disease.	Cure in	Quantity of Ergot taken.
1. Menorrhagia -	18	—	13 days	60 hours	216 grains
2. Ditto. - - -	23	—	6 weeks	7 ditto	108
3. Ditto. - - -	30	—	15 days	44 ditto	168
4. Ditto. - - -	39	—	1 month	¼ hour	108*
5. Ditto. - - -	41	—	ditto	6 hours	204
6. Ditto. - - -	28	1	9 days	18 ditto	192
7. Ditto. - - -	23	2	1 month	3 days	240
8. Ditto. - - -	32	3	9 days	4 ditto	132
9. Metrorrhagia -	36	2	8 days	24 hours	180
10. Ditto. - - -	30	5	6 hours	½ hour	51
11. Ditto. - - -	30	Several	7 days	10 days	192
12. Ditto. - - -	35	10	4 days	5 days	288
13. Carcinoma uteri	49	—	36 hours	36 hours	120

Lancet, March 30, 1833.

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14. *Effects of large doses of Quinine.*—M. Scott, a medical gentleman, and the subject of the following case, has been from early life the victim of dyspepsia; but although his stomach was a perpetual source of uneasiness, his bowels had never in any way troubled him, until, in the year 1829, he was suddenly seized with general and violent pains in the abdomen, of so excruciating a character as to defy description. After the use of opiate enemata, the paroxysms subsided; but recurred regularly for several successive nights, and at length even opium failed to afford relief. Turpentine clysters were next resorted to, which acted like a charm; the pains subsided, and no relapse occurred for an entire year: at the end of this period they returned, with, if possible, increased violence, and recurred several times a day; and, the intermissions getting shorter, they at length were almost constant. Now even the turpentine enemata failed to assuage the agony, and a variety of treatment was followed, under the advice of Dr. Johnson, with ultimate benefit.

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* "In this case the discharge ceased in a quarter of an hour after the administration of the first dose 48 grains; the administration of the ergot was, however, continued until the third day."

The attacks, however, though lessened in duration and in frequency, were not subdued, and Mr. S. subsequently consulted another physician, who recommended quinine, looking on the disease as intermittent neuralgia, but telling him, at the same time, that he must not expect relief excepting from *very large* doses. He was desired to commence with two grains three times a day, and to increase each dose a grain every other day, until they arrived at twenty grains; *i. e.* a drachm a day. Liberal diet was at the same time allowed.

Until the doses were increased to fourteen or sixteen grains, he did not experience any peculiar effects; but then he began to feel heat of skin, dryness of mouth and fauces, and obstinate costiveness. He likewise, at the same time, lost the power of naming substantives; was obliged for a long while to consider what different familiar things were called; and as to casting up a line of six or eight figures correctly, it was utterly impossible; he could never make the amount twice alike. His perceptions of quantity were greatly impaired, so that, in prescriptions, he wrote ounces instead of drachms, ordered drachms instead of grains, directed draughts to be put in gallipots, and prescribed fluids to be made into pills.

Notwithstanding these symptoms, he still persevered with the sulphate of quinine, until he took a scruple four times a day. He was, however, unable to continue these excessive doses long; for the untoward symptoms above detailed increased, so that he was often unable to stand, and several times fell suddenly when in the streets. He, therefore, discontinued the quinine; but, after a short interval, he recommenced its use, at the suggestion of the same physician who at first prescribed it. Now he found that he could not exceed eight-grain doses; for, when he arrived at that quantity, the same effects ensued as from the former scruple doses, and he consequently left it off altogether.

Mr. S. is unable to take any, even the mildest purgative, without provoking the return of one of these excruciating paroxysms, and he regulates the alvine excretions by warm water enemata.—*Lond. Med. and Phys. Journal, March,* 1833.

PRACTICE OF MEDICINE.

15. *Hysteria.*—Professor Chiappa states in the *Annali Universali,* that enemata of iced-water immediately dissipate the symptoms which characterize the hysteric paroxysm.

16. *Anthelmintic Emulsion.*—"Turpentine is now regarded as the most certain of our medicines for the expulsion of intestinal worms: it has been exhibited under a great diversity of forms, with a view chiefly to the modification of its nauseousness, or the increase of its specific powers: as combined in the subjoined prescription, it acts with remarkable efficiency:—℞. Infusi Sennæ, f. ʒx.; Syrupi Rhamni, f. ʒj.; Confectionis Scammoniæ, ℈ij.; Copaibæ, ♏xxx.; Olei Terebinthinæ Rectificati, f. ʒvi.—Rité misceantur ut fiat emulsio, quæ horâ matutinâ sumatur.

"This is the dose for an *adult,* having no contra-indicative symptoms: the patient should take it in bed, about four or five o'clock in the morning, and afterwards endeavour to sleep. Generally, within four hours, the medicine begins to determine cathartic effects: if these do not then commence, a small teaspoonful of the confection of scammony, or half an ounce of castor oil, will induce alvine evacuations; after each of these, some drops of an essential oil, or of the aromatic spirit of ammonia, or a little brandy in water, will counteract the tendency to squeamishness and exhaustion which the terebinthinate medicines usually produce. In cases where invermination is indicated by general symptoms, though worms have not been discovered in the patient's dejections, this medicine often accomplishes the dislodgment of these reptiles and a removal of the disorder which their presence had occasioned: in all other cases, the results of its administration are invariable and salutary. For the destruction of tæniæ, the emulsion should be exhibited at least four times, at moderate intervals; its repetition, within a fortnight, seldom fails of eradicating the other kinds of parasitic animals by which the alvine canal is infected. The use of this vermifuge, should be accompanied and followed by a course of medication with bitters, iron, and mild resinous aperients with aromatics."—*Med. Chirurg. Rev. July,* 1832.

17. *On Infantile Convulsions.* By Professor **Graves**, of Dublin. Extract from a Clinical Lecture.—When we consider the convulsive affections of the infantile period, we find that they may arise from a variety of causes. In the first place, they may be produced by the process of dentition. Some persons seem to think this impossible: but it is not only possible, but true; for teething is capable of exciting a very great degree of irritation in the system. We also observe that an irritable state of the brain, accompanied by a hydrocephalic tendency, will produce convulsions; but in very many instances, particularly in children of the ages mentioned above, they proceed from intestinal irritation. Of those forms which spring from the irritation of dentition, or of cerebral excitement, I do not intend to speak, as, on these matters, the standard medical works furnish abundant information. I shall restrict myself, therefore, to some observations on those convulsions which depend on intestinal irritation. As such convulsions frequently arise from causes which affect digestion, and produce a change in the mode of nutrition, they appear very soon after birth. The animal, which but a short time before was nourished by the placenta, is now supported by ingesta; and hence, from this sudden change, if there be any source of irritation existing in the system of the child, or in the nature of its food, an unhealthy state of bowels rapidly ensues. To the consequences of this affection, manifesting itself so soon after birth, nurses have given the name of *nine-day convulsions.* Again, when another change is made, and the nurse's milk is left off, children are also liable to convulsive fits, and these are the convulsions of ablactation. In fact, at any period during the first year, infants are very apt to get convulsions, from various causes. If the mother uses an improper kind of food or drink, or gets into a bad state of health, or be strongly affected by mental emotion, the quality of the milk will be suddenly changed.* Under all these circumstances, or if the child be over-fed, (a very common fault,) the bowels get out of order, the whole intestinal canal is thrown into a state of irritation, and convulsive fits succeed.

It is necessary to be more explicit on this subject. When you are called to treat a case of infantile convulsions, bear in mind that they very frequently arise, particularly during the first six months, from the cause before mentioned, and this should, therefore, claim at once your attentive consideration. I remember the time when it was the common practice to treat every case of convulsions as if it were an hydrocephalic attack, and when antiphlogistics, calomel, and cutaneous irritation, were the indiscriminate means employed in combating every form of this disease. If a child happened to get a convulsive fit, it was immediately said, here is inflammation or congestion of the brain; and leeches were applied in successive relays, calomel given in large doses, egg-shells, crabs' eyes, magnesia, and other absorbents administered, and the unfortunate infants cruelly tortured by the repeated application of blisters to the scalp. I have seen cases where this blistering was carried to such an extent, that the child had not a place to rest its head upon. It is to Dr. Gooch we owe the valuable discovery, that there is in children a state of heaviness of head and torpor, accompanied by a tendency to convulsions, in which depletion cannot be employed, and where narcotics and even stimulants may be used with advantage. Dr. Locock asserts, that convulsions of this nature may be recognised by the depressed state of the fontanelle, an assertion which I have not yet verified. With respect to leeching, I have to remark, that a single leech to an infant is equal to a bleeding in an adult; and yet how often have we seen children leeched and leeched, until, becoming pale and exsanguineous, they sink as much from loss of blood as from the effects of disease.

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* It has been lately proved, that the custom adopted by some, of keeping the child at the breast for a year or a year and a half, is both unnatural and injurious. Every child should be weaned when nine months old.

With respect to the causes and periods of indigestion in children, I have already spoken. There is one point more which I wish you to hold in memory. Milk is a compound fluid, a beautiful emulsion furnished by the hands of nature, in which sugar, oil, and curd, are blended with a certain proportion of water. Now, when a compound fluid, such as milk, enters the stomach, and is submitted to the process of digestion, those parts which are soluble in water are absorbed, and those which are not, become first coagulated, and afterwards undergo resolution in the gastric juice. Thus, while the water and sugar are absorbed, the curd of the milk is separated from it by coagulation, and forms a solid substance, which is acted on by the stomach, and becomes dissolved by the agency of the gastric juice, and in this way contributes to nutrition. Not a particle of the milk, however, ought to enter the duodenum until it has passed through the usual process of digestion. As the first step to the accomplishment of this is the coagulation of the curd, this occurrence takes place with extraordinary rapidity: and it is a sign of health if the milk be thrown up in this state immediately after it has been sucked. The rennets of young animals give striking evidence of this power. But if it should happen that the stomach does not act properly, and the curd remains undissolved, what is the consequence? The curd passes into the alimentary canal in a condition different from that in which nature intended it should, and consequently produces intestinal irritation. None of the purgatives given to children are attended by half so much griping as this substance. This explains the phenomena which, in such cases, present themselves to our observation. The child becomes griped, irritable, and feverish, his tongue is loaded and white, he gets restless, and now and then utters a shrill scream. In this way the disease may go on for a considerable time; as the child is dropping asleep, he starts suddenly and screams out, bends himself in the form of an arch, and throws his head back as in opisthotonos. I have seen children in this state for a week. The physician, or nurse, gives castor oil, or some other purgative, and a great quantity of the curds are passed, and surprise the child's relatives. On examining the discharge, you find it consisting of lumps of different sizes, coloured imperfectly with bile, and having a burnt appearance; on breaking them up, you perceive them to be white internally, and consisting of indigested curd. You remove these by purgative medicine, and the child gets well. Now, we all can do this; it is clearly laid down in books: you are told to examine the egesta, and give purging medicine where it is necessary. But there is one fact which has not been noticed. When you have treated the child in this way, and the attack has been cured, if the child is very strong, when put to the breast again, he may go on well, and you have no further trouble, but if he is weakly, or of an irritable habit, when he is brought back to the suck again, or spoon-fed with milk, the same process of imperfect digestion takes place, and he gets another fit. The physician is again called in, and repeats the purgative, and the child gets better a second time; and, in this way, the physician goes on giving medicine, and the mother giving milk, and every body wonders at seeing what a quantity of foul stuff passes from the bowels. How are you to avoid this? By making the infant abstain from milk in any shape for twenty-four hours, sometimes for the space of two, or even three days. It is incredible how small a portion of milk, even in the most diluted state, will keep up this disease, acting like a species of poison on the intestinal mucous surface. You know, that animal poisons, such as the variolous, or vaccine virus, will affect the system, even when applied in a state of extreme dilution, and you can therefore conceive, that a small portion of milk will operate in this manner. I attended a case of this disease some time ago; the child had a relapse, and, on being called in again, I asked the mother whether she had given it any milk, and she told me scarcely any. I am always suspicious where I hear the word *scarcely* used; and, on requesting to see the kind of food she had been administering, she handed me a bowl of barley water, with the usual proportion of milk and sugar in it: it is in this way that we see the disease prolonged week after week by the prejudices of the nurse and the ignorance of the physician. Well, if you forbid milk altogether, what will you give the child? Let him take chicken broth, barley water, thin panado, veal broth, or whey. How long are you to continue this? The number of days will depend on the power which the child possesses of regaining the proper tone of the stomach; some children will have the stomach out of order to-day and well to-morrow, and the length of time you are to keep up this diet will vary considerably. When you are called, therefore, to a case of convulsions, inquire into the history of its symptoms, the nature of the alvine evacuations, and the quality and quantity of your patient's food; and if you find that, before the attack, the child's bowels have been in a bad state, that they have been for some weeks inclined to be loose, or that the stools are, at the time, similar in colour and consistence to what I have described, (though, by the by, you are often told, that every thing is quite right when it is not the case,) you will then be able to judge properly of the nature of the case, and, by giving aperient medicines, you will probably not only cure the disease, but also prevent a return of the convulsions. Sometimes, however, the convulsive fits will remain after the irritating sordes have been removed by purgative medicines. Absorbents are next made trial of. These have a very beneficial influence in many cases, they can do no harm, and where acid is present, (and this occurs in the stomachs of children to a greater extent than in those of adults,) prove mildly purgative. But if the convulsions continue, what else will you prescribe? I remember attending, not long since, an infant, about three or four months old, who had been for some time under treatment for convulsions. Leeches had been applied to the epigastrium; it got calomel, castor oil, and hydrargyrum cum creta, absorbents, aperient and fœtid enemata, and blisters to the vertex and stomach. Still the convulsions went on. Well, what did I do? I prescribed the following mixture, ℞. Spirit. terebinth. ʒj.; olei ricini, ʒiv.; syrupi papaveris albi; mucilaginis g. Arabici, aquæ fœniculi, āā. ʒij. Of this mixture, when well shaken, exactly ʒj. was to be given every third hour; and what was the result? It operated on the bowels, and produced a copious discharge of urine, a marked improvement took place, and towards evening the convulsions entirely ceased.

My friend, Dr. Brereton, has, in similar cases, after the bowels were evacuated, succeeded in preventing a recurrence of the convulsions by means of the following mixture, suited to a child six months old:—℞. Olei anisi, gt. iv.; Sacchari albi, gr. x.; intimè misceantur et adde Aquæ fontis, ℥ij.; Pulv. rhei, gr. x.; Carbonat. magnesiæ, ℈j.; Tincturæ opii, gt. iv.; Spirit. ammoniæ fœtid. gt. x. Sumat cochleare j. medium tertia q. q. horâ.

It is to be observed, that much caution is necessary in giving such combinations containing opium to infants, but there is a period when depletion ceases to be useful, that a mixture like this will prove the most effectual means of curing convulsions. In such cases of convulsions, in addition to the use of purgative medicine, prescribing the mother's milk, and giving spirit of turpentine, you may, during the first twenty-four hours, while the child is strong, order a warm bath, applying, at the same time, a sponge dipped in cold water to the head; or, if the child be weak, incline its head over the side of the cradle, and use the cold sponge, and you will find that it will diminish the fit.—*Lond. Med. and Surg. Journ. January* 26, 1833.

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18. *Colliquative Diarrhœa.*—Dr. Graves states, that no other medicine arrests the colliquative diarrhœa which attends consumption, in a more satisfactory manner than a grain of the nitrate of silver given three or four times a day. In those cases in which there is ulceration of the bowels, this remedy is contra-indicated.—*Lond. Med. and Surg. Journ. Feb.* 16, 1833.

19. *On the Employment of the Hydro-ferrocyanate of Quinine in Intermittent Fevers.* By G. Cerioli, M. D.—Though quinine, particularly when exhibited in combination with certain alkalies, is eminently useful in the treatment of intermittent diseases, yet it is very certain, that in a number of instances, the disease returns in a very short time, the remedy apparently having accomplished little more than the mere interruption of its periodical tendency. Without pretending, says M. Cerioli, to be acquainted with all the causes which are productive of such frequent relapses in intermittent diseases, I am inclined to believe, that those persons are not very far from being correct, who, regarding these affections as not altogether dependent upon an irritation or inflammation, the seat of which is fixed, and easily recognised, admit that besides miasmatic emanations, humidity, &c., certain organic alterations, particularly of those organs contained within the cavity of the abdomen, are capable of inducing similar diseases. I believe, moreover, that it is in consequence of the little attention paid to the state of the viscera, that quinine and its preparations so frequently prove inert. It is true they exercise a beneficial effect in putting a stop to the periodicity of the disease, yet they exert no influence over the pathological lesions or inflammatory actions, upon the existence of which periodicity depends. Hence it is that in a great many cases, we are obliged to resort to the combined operations of antiperiodics and antiphlogistics to effect a cure. Our author, like most of the Italian practitioners, regards the hydrocyanic acid as one of the most powerful agents which we possess, for diminishing the augmented actions of the vital powers which accompany inflammation. He has accordingly combined this acid with the quinine, and employs the salt resulting from the combination in periodical diseases. The results which he has obtained in a number of cases, sufficiently prove, that although his theory may not be entirely incontestible, the remedy which he employs, possesses febrifuge properties of the greatest activity. It is true he has employed it only in cases of simple intermittent fevers, without complication, and which were attended by no dangerous symptoms; "for," says he, "I have never dared to administer a substance of which I at present know so little, in cases of malignant intermittent, in which the least delay might endanger the life of the patient." It is principally in those fevers, the paroxysms of which are kept up by visceral irritation, that he administers the hydro-ferrocyanate of quinine. He has employed it in twenty-four cases of this nature, in all of which the sulphate of quinine had completely failed, not only in checking the disease, but even in lengthening the intervals between the paroxysms. In thirteen of these cases, the disease, which assumed the quartan type, seemed to depend upon an irritation of the spleen; in some of these, indeed, this organ was manifestly more voluminous than in its normal condition; whilst in others, there still existed pain upon pressure in the left hypochondriac region, which pain usually became lancinating during a paroxysm. These cases were, generally speaking, of long standing, the disease, in some of them, having existed for several months, in others again for two or three years, and in one, that of a young girl, it had lasted eight years. They had all resisted the most approved methods of treatment, conducted with the greatest prudence; such as sanguine depletions, both local and general, emollients, aperients, and finally the sulphate of quinine itself, which produced little or no effect. It is sufficient in quartan fevers, as well as in those of any other type, to commence in the first instance with the hydro-ferrocyanate, in doses of two, three, four, and even eight grains, made into six pills with a little syrup, the whole number to be taken during the day. The dose should never be augmented beyond two grains, but progressively, and where the fever has not completely yielded, or where the paroxysms have been merely retarded, or when the first dose does not disagree with the stomach. Rarely, continues M. Cerioli, have I been troubled with relapses, and I have never seen, during the exhibition of this substance, those exacerbations which so frequently manifest themselves during the employment of the quinine or its sulphate, arise; though I do not believe, that the exacerbations of fevers, which bear a resemblance to intermittents, should

be attributed to the irritating action of the sulph. quinine. A chronic inflammation of the liver was the cause, in four cases, of the appearance of the irregular or erratic fever, which was attended with considerable weakness, emaciation, anorexia, flatulency, gastralgia, reddish urine depositing a brick-dust sediment, and lastly by obtuse pain, which in two of the individuals extended from the hepatic region to the right shoulder. In one of these cases the chronic hepatitis depended upon a rheumatismal cause; in the other it had been induced by irregular living, which had moreover, brought on an irritation of the stomach of some intensity. Topical blood-letting often repeated, either from the anus or right hypochondriac region, or from the epigastrium. Emollient enemata, mercurials, or rigid diet, and in one of the cases the warm bath was found exceedingly beneficial in diminishing the intensity of the intermittent abdominal irritation; but the fever continued to progress in spite of the employment of the sulph. quinine. In order to prevent the occurrence of a new congestion of the liver or stomach, M. Cerioli administered the hydro-ferrocyanate of quinine, which effected a prompt and permanent cure.

Case.—A young woman, of good constitution, was seized with a tertian fever, which was treated with the sulph. quinine, in fifteen-grain doses. The fever, instead of yielding, became on the contrary continued, at the same time the patient complained of a constant sensation of heat and pain in the epigastrium, which the most digestible articles of food, or the slightest pressure upon that region rendered almost insupportable. To these symptoms were added, violent thirst, bitter taste in the mouth, head-ache, and a fever which underwent a manifest exacerbation upon the days corresponding to the paroxysmal days of the preceding tertian. M. C. commenced by attacking the gastric symptoms, with the numerous antiphlogistic remedies, by which means in about fifteen days, the whole of the inflammatory symptoms had entirely disappeared. The fever itself ceased during several hours, but soon returned under the tertian type, the aspect under which it had previously existed. The sulph. quinine was again had recourse to, but without any success. The hydro-ferrocyanate was then administered, the paroxysms in a few days disappeared, and a permanent cure was effected. Our author reports several cases of intermittent affections, characterized by different phenomena, in which he employed this salt of quinine with great success. We shall only cite two of these cases, which seem to us the most interesting.

Case I. A priest, somewhat advanced in years, who, in his youth, had been subject to a constant cough, accompanied by mucous expectoration, and occasionally by spitting of blood, was suddenly seized with a partial loss of the intellectual faculties, lividity of the face, swelling of the jugulars, stupor, very hard pulse, slight degree of heat of surface, partial aphonia, distortion of the mouth, and a commencing hemiplegia. Two large bleedings from the arm, the administration of gentle cathartics, and a strong decoction of arnica flowers, caused the whole of these dangerous symptoms to disappear, and the patient considered himself as cured. In about five days, however, the same symptoms reäppeared, accompanied by intense fever, which was preceded by a chill. V. S. was again had recourse to, and in about eight hours time, after an abundant perspiration, this alarming state entirely vanished. There was no return of fever the next day, but the day after it again appeared, and with augmented severity. No longer doubting as regarded the nature and type of the disease, M. C. administered the hydro-ferrocyanate of quinine; after the second dose, all the symptoms entirely disappeared, and a permanent cure was effected.

Case II. The next case was that of a young woman of robust constitution and sanguine temperament, who laboured under acute sciatica, of a paroxysmal type, the paroxysms usually terminating by profuse perspiration. Bleeding from the saphena vein, leeches, cups, scarifications, emollient and anodyne fomentations, vesicatories, the belladonna ointment, the cautery, and a host of other remedies were administered, in the hope of effecting a cure. By these measures an amelioration amounting almost to a cure, but which lasted only four months, was effected. About the end of this period the disease reäppeared, with more violence than ever, and assumed the quotidian form. The sulph. quinine having completely failed in producing any relief, M. C. administered the hydro-ferrocyanate in the dose of eight grains, the pain promptly disappeared, and a complete and permanent restoration to health took place.

Finally, our author assures us, that he has obtained the most happy results from the employment of this remedy, in three cases of pulmonary irritation, characterized by pain in the side, difficult respiration, cough, and impossibility of lying on the right side. Hæmoptysis of some violence was likewise present in one of the cases. General blood-letting, purgatives, and other appropriate remedies soon put a stop to the continued fever, it however reäppeared under the tertian type, the paroxysms of which were marked by a return of all the symptoms above described, with the addition of a copious expectoration of red frothy blood. The sulphate having failed, the hydro-ferrocyanate of quinine was prescribed, and in a short time a permanent cure took place.—*Archives Gén. Dec.* 1832, *and Annali Univ. July,* 1832.

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20. *On the Employment of the Chloride of Lime in the Treatment of Psora.*—Professor Fantonetti, of the University of Pavia, has lately published a statement of the happy results obtained by himself, both in private and public practice, from the application of the chloride of lime in the treatment of psora. The Professor has treated eight cases of itch, all of which were received into the Hospital of Pavia, about the same period with this remedy. Out of this number, five were cured in from six to eight days from the commencement of the treatment, and the rest in a few days more.

The manner of using it, is to prepare a lotion, composed in adult cases of from one ounce to an ounce and a half of the chloride, to a pint of common water, and in children, of one ounce of the chloride to the same quantity of water, with which the parts affected are to be washed three or four times a day. Every third day the patient should take a warm bath, for the double purpose of cleansing the surface of the body, and washing off the crust of carb. lime, which may adhere to it. The warm bath moreover, tends to sooth the irritation, which this remedy sometimes occasions, as when the quantity of the chloride has been too great in proportion to the water, or its application too frequently repeated, or when the skin itself was originally in a state of irritation.

Professor Fantonetti assures us, that in almost every case of psora treated in this way, a cure is effected in eight days time from the commencement of the treatment, and he recommends it to the profession as the most certain, the most prompt, and at the same time the most economical of all the remedies with which this disease may be treated. These results of M. F. should particularly attract the attention of the profession, since similar ones had previously been obtained in France by the exhibition of this article. M. Derheins, an apothecary, residing at Saint-Omer, published in 1827 a paper on this subject; and to him, therefore, is due any credit that may be attached to the introduction of this remedy into practice; upon the utility of which our professional brethren will have to decide. M. Derheins, as well as M. Fantonetti, assures us, that he has cured some of the most inveterate cases of the disease, with it alone, after they had resisted a host of other remedies. He employed a lotion consisting of three ounces of the chloride to a pint of water, with which the diseased parts were washed three or four times a day. The average period necessary to effect a cure in his hands, varied from six to ten days. He had however remarked, that the cure was more prompt when, instead of the common solution of the chloride in water, he employed a liquid chloride, obtained by passing a stream of chlorine gas through a mixture of lime in water, until the gas was in excess. We should, moreover remark, that the statements given above are supported by the following facts. In 1810, the Spanish prisoners who were crowded together in large numbers at Flessingue, were attacked by fevers of a very fatal character, which soon thinned the ranks of these unfortunate beings, the most of whom at the time laboured under the itch. Water impregnated with chlorine was used in order to diminish the contagious tendency of the fevers, and M. Cluzel, the apothecary, observed that all those individuals affected with psora who washed their hands in the chlorated liquid, were very much benefited by it, and more than one attributed their cure of this disease to the employment of this simple remedy alone. However this may be, it is certainly an interesting fact, that in repeating the experiments of M. Derheins, which were published by M. Chevallier in his treatise on the chlorides, that M. Fantonetti met with similar beneficial results. The observations which have been made upon this article, should induce the profession to set the point relative to its great efficacy at rest, by at once repeating the experiments of MM. Derheins and Fantonetti. If the cure be as prompt as they state it to be, the introduction of the remedy will certainly prove one of the most important improvements in the treatment of this disease; for, according to Melier, the average period required by every other method of treatment employed in psora to effect a cure, is twenty days. The odour of the chloride of lime is by no means so disagreeable as that of sulphur, (the remedy usually resorted to,) nor does it stain every thing with which it comes in contact, as the latter article, which is almost always combined with some fatty substance, does. If, therefore, it proves as successful in effecting a cure as the sulphur has, it certainly should be preferred to this article in practice.—*Bulletin de Thérapeutique.*

21. *Chronic Bronchitis.*—Professor Graves has been treating a case of this, in which he suspected dilatation of the bronchial tubes, with an emetic every day, after the plan recommended by Dr. Fothergill, and lately by Dr. Elliotson.—"In cases like this," says Professor G., "there is a great quantity of mucus in the bronchial tubes, the lung becomes loaded and respiration oppressed, and the best thing you can do is to give an emetic, which produces the most beneficial effect on respiration. That the emetic may not interfere with the man's digestion, I give it in the morning, about four or five o'clock, when he awakes. Such persons are generally awakened at an early hour by the cough, which is brought on by the quantity of mucus accumulated during sleep, and continue to cough for three or four hours with great distress. This is the time when an emetic is given with the best effects; it unloads the lungs, shortens the fit of coughing, and gives very speedy relief, at the same time that it does not interfere with the patient's meals, for the stomach will be quite well before breakfast."—*Lond. Med. and Surg. Journ. April,* 1833.

22. *On Rachialgia.* By M. Andral.—The painful affections of the vertebral column, when strictly nervous, and independent of inflammatory action, are called *rachialgia*, a name by the way which has been very erroneously given to the painter's colic. The rachialgic pain, then, may extend along the whole of the spine, or be confined to one of its three principal divisions, or embrace parts of two of them, for example, engaging half of the cervical and a third of the dorsal vertebræ. Sometimes too, it is confined to half of the vertebral column precisely, and then it acquires the name of *hemirachialgia.* The symptoms of rachialgia may vary according to the part of the spinal column affected. When the cervical vertebræ alone suffer, it is not rare to meet with pain in the neck at the same time, extending occasionally to the face, occiput, upper part of the back, or arm. It is sometimes complicated too with lesions of movement in the muscles, which derive their nerves from this part of the spinal cord. Paralysis, muscular spasms, or tonic contractions, may thus supervene. Sometimes, by an inexplicable sympathy, violent palpitations of the heart are experienced, and at the same time the sensibility of the skin may be altered, and torpidity occur. In the dorsal or lumbar rachialgia the symptoms maintain a close analogy with those now described, verging, of course, according to the different structures and functions of the parts which the nerves supply, thus in

the lumbar rachialgia the expulsion of the urine may be affected. It may escape involuntarily in some, or be exerted with difficulty in others.

As for the diagnosis of rachialgia, the absence of pain on pressure distinguishes it from other spinal affections. The rachialgic pain is further remarkable for its mobility. An individual is one day tormented with all the symptoms just described, and to-morrow he is well, or at least free from pain. This is a mark which well distinguishes the mere neuralgic pain from organic lesions of the spinal cord. May we regard these symptoms then as the effects of transitory congestion,—of a state approaching to, though not reaching, inflammation? This is a mere hypothesis, which further experience can alone confirm or refute. Its consideration, however, will serve at least the useful purpose of connecting in your memory the transitory and oscillating character of the disease, with a notion that will render its diagnosis more easy, and at the same time do no practical mischief. The treatment consists in the use of different ointments, frictions with various anodyne and narcotic substances, with the ointment, of course, of potash, for example, or with oil containing the tincture of hyosciamus or belladonna. Experience has shown that tepid baths and douches are of much utility. If the pain persists, and the other complications present themselves, we must, according to the symptoms, have recourse to venesection, leeches, irritating and revulsive plasters; to the application of tartar emetic ointment, frictions with croton oil, &c. Blisters, the cautery, and moxa, may also be employed, should the symptoms demand such energetic measures.

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23. *Case of Gastro-enteritis simulating Epidemic Cholera.*—Professor BROUSSAIS has recorded the following interesting case in the No. of his Journal for January, 1832. The patient was suddenly attacked, without any ascertainable cause, with severe colic, painful vomiting, and diarrhœa. When brought into Dr. Broussais' wards, he was in the following condition:—Aspect cadaverous; face shrunk; eyes red; mind bewildered; pulse small and scarcely perceptible; extremities icy cold; tongue dry, red, and cold; sordes about the teeth; epigastric region tender, when compressed. Although the pulse was so faltering, and the skin so cold, Dr. B. ordered fifteen leeches to the epigastrium, and as many to the anus. An opiate starch enema was given to quiet the bowels; lemonade to drink. The diarrhœa was stopped, but the vomiting continued for two or three days; the stupor increased, the eyes became more red, and the face more corpse-like. Ten leeches over the jugular vein of each side, and frictions with warm camphorated vinegar on the abdomen. The head was thus relieved, but in two days afterwards the stupor returned, and twenty leeches were now applied to the temples, blisters to the thighs, and the stimulating frictions to the belly.

Six days having now elapsed, without any marked improvement, Dr. B. ordered two more blisters to the thighs, and the embrocations to be continued; and although the pulse was not to be felt, he forbid all stimulants, and even broth. On the tenth day the patient appeared somewhat revived, and he asked with a weak voice for food. A little very thin broth was given. A blister was ordered between the shoulders; the frictions were assiduously kept up, and the only food permitted was lemonade and gum water. A slight attack of bronchitis came on, and the pulse rose, and heat of surface increased; in three days the symptoms abated, and the pulse again fell; the same treatment was continued. On the fifteenth day after his admission, the symptoms were thus reported,—head is less confused, aspect not so cadaverous, but the coldness of skin and smallness of pulse little improved. Next day, however, the pulse rose, and the patient appeared altogether better. The abdomen was soft, compressible, and not tender; and the tongue was moist, and still rather red. Dr. B. was led to infer that now the spasmodic contractions, induced by the phlegmasia of the small intestines, had ceased, and that therefore the peristaltic movements, hitherto impeded, might permit the digestion of broth; it was accordingly given with excellent effects, and the patient progressively *advanced to recovery*.

Remarks.—It appears that gastro-enteritic inflammations have the effect of greatly weakening the action of the heart, and of thus enfeebling the cutaneous circulation, while at the same time the blood is congested in the viscera. In such cases we do not approve of the employment of purgatives, or of any stimulants; and allow only emollient drink at intervals, employ frictions on the surface, and large warm poultices to the belly. If one part of the abdomen appears more congested than another, leeches are to be put on that part, and to be repeated according to circumstances. This plan of treatment must be undeviatingly persevered in, till the spasmodic contraction of the bowels ceases, and the peristaltic movements are reëstablished, the indications of which are the relaxation and pliancy of the abdominal muscles, which so faithfully correspond to the condition of the intestinal superficies; then, but not till then, are we to give nourishment. In short, our treatment is comprehended in three things, viz. local bleeding, external warmth and frictions of the surface, and lastly, patience.

OPHTHALMOLOGY.

24. *Hemeralopia, or Night Blindness.*—About the beginning of February last, several of the garrison of Belfort, (France,) complained of being unable to see either after sunset or before sunrise. The number thus affected, however, was inconsiderable, not exceeding twelve or fifteen, but they increased rapidly towards the end of February and during the month of March. Every evening, a little after sunset, a number of soldiers, (for it was confined to the troops composing the garrison,) might be seen wandering about, and scarcely able to find their way. Many were obliged to get persons to guide them, or to feel their way along the walls and houses, to gain their barracks. Ninety of the 36th regiment of infantry, and twenty of the first regiment of dragoons were thus affected. Sixty of these were cured in the course of about ten days by means of tonics and stimulating washes to the eye, blisters to the back of the neck, and full doses (15 or 20 grains) of calomel, though this last was but seldom found necessary. The epidemic entirely ceased towards the end of April.

The blindness in hemeralopia is seldom complete; that is to say, the subjects of it are for the most part able to distinguish objects, and especially any thing brilliant, which is near them, but even these appear as if seen through a dense cloud. In some, indeed, vision is altogether abolished, even luminous bodies making no impression upon the eye: in these the pupil is generally much dilated, and quite motionless, while in the former it has nearly its natural appearance. Most authors, in speaking of hemeralopia, represent it as preceded and accompanied by head-ache, giddiness, indigestion, or coma, or functional disturbance; but in the cases at Belfort, all the patients were, with the exception of the night blindness, in perfect health. Its causes are evidently but ill-understood; and, indeed, it prevails endemically in some places, as at St. Martin-de-la-Roche and Follcunville, which have no local peculiarities by which this can be accounted for.—*Lond. Med. Gaz. June*, 1832.

25. *Method of Applying Nitrate of Silver to Ulcers of the Cornea.*—A very ingenious method of preparing nitrate of silver for application to ulcers of the cornea, is described in the *Bulletin de Therapeutique*. This consists in heating an inch of the extremity of a silver probe, and then lightly rubbing it on a stick of lunar caustic. The salt is immediately melted, and unites with the metallic surface, coating it with a thin layer of caustic; if too thin the process is to be repeated. When the instrument cools it must be wiped clean.

SURGERY.

26. *Chloride of Soda in Burns, Scalds, and Black-Eyes.*—Mr. Holt recommended at a meeting of the Westminster Medical Society, the chloride of soda as the best application he is acquainted with in the cases just enumerated. Mr. H. stated that he was called to a child that had pulled a saucepan of boiling water over its face and chest, on Monday, by which the whole of the cuticle was destroyed. He had four ounces of the solution of chlorine and water made up and applied, and subsequently chlorine mixed with unguentum cetacei spread on the parts. The result was, that by the following Saturday, the injured part was perfectly well, while a small portion on the back, treated by other means, was unhealed for a fortnight. He particularly recommended the use of the chlorine where vesication had not yet taken place; and pledged his veracity, that if applied immediately after a scald had occurred, not the slightest scar would remain. Where the skin was broken, it was his custom to make the lotion of four ounces to a pint of water, and the ointment of a consistence not quite so thin as cream. Amongst other cases he cited was one of a solicitor, whose hands were much blistered in putting out the flames of his bed-curtains, fired by his servant. He (Mr. Holt) sent a couple of quarts of the lotion to this gentleman, had it poured into soup plates, wrapped his hands in lint, as no skin was broken, placed them in the plates, and kept them there some time, and the next morning his hands were so perfectly well, that only one small dried patch of burn existed; and he was not out of his office an hour in consequence of the injury. An hour and a half had elapsed before the application. For the first few minutes the remedy increases the pain, but after that it produces ease. He would also state, that he knew of nothing so efficacious in a "black-eye" as the application of a solution of chlorine. It would disperse the awkward effects of a blow in that direction, almost like a charm.*—*Lancet, April* 6, 1833.

27. *Case of Œdematous Angina successfully treated by Tracheotomy.*—The following interesting case was related by Baron Dupuytren, in one of his clinical lectures at the Hôtel-Dieu. Mad. B. æt. 34, governess, was taken to the Hôtel-Dieu on the 24th of October, 1832, in a state of suffocation, which every moment threatened her life. Five months before, this lady had been attacked with a guttural angina, and very intense bronchitis. She had long felt pain and heat along the anterior part of the neck, her voice had become hoarse, and for some days she had been quite dumb. Repose, a bleeding, leeches, and emollient soothing tisans, calmed the greater part of the distressing symptoms; and scarcely was this improvement effected, when she resumed her habitual occupations, went to sing at church with her pupils, and fatigued herself greatly. Her symptoms accordingly returned, less urgently, but more obstinate than before. She coughed frequently, experienced continual heat and pain of the larynx. The voice was altered, respiration difficult, sometimes hissing, and convulsive during the night. However, there were still alternations of improvement, until at length she was compelled to come to the Hôtel-Dieu in the following condition:—The posterior wall of the pharynx was red, a little painful, somewhat swollen. The larynx, and all the surrounding parts, were the seat of a peculiar uneasiness. The respiration was difficult, inspiration hissing, the voice hoarse and weak. She complained of a very distressing pain behind the lowest piece of the sternum. During sleep, which was but of short duration, the respiration was more difficult, and the laryngo-tracheal hissing more decided. On the 25th, 26th, and 27th, the affection was treated by simple methods, such as the tisan of liquorice, poultices about the neck, and soothing gargles. The disease, however, continued to proceed. The laryngeal embarrassment became more considerable. Madame B. believed she had some

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* In some of the northern counties of England, the working men treat a black-eye very beneficially, by sucking with the mouth, for a short period, behind the bruised man's ear.

foreign body in her throat, which hindered her from breathing; the coughing was now in long fits, the laryngeal hissing more intense, the voice very hoarse, weak, and interrupted. During the day, prostration and somnolency; restlessness and inquietude during the night. Her face expressed anxiety. The pulse was frequent and irregular in the paroxysms. At this period, M. Husson thought he detected a swelling of the mucous membrane of the larynx, and agreed with MM. Recamier and Broussais in regarding the case as one of œdematous angina.

The 29th, 30th, and 31st of October, twenty grains of ipecacuanha were given daily, seven grains every third hour. There were several evacuations upwards and downwards, the vomiting being accompanied by the serious symptoms of convulsions, determination of blood to the brain, frequent cough, and imminent suffocation. Palliative means were still employed; among others, leeches to the vulva, her catamenia being but scanty. On the 2d of November the suffocation augmented, and she was bled copiously from the arm. Sinapisms were applied to the thighs, and a purgative injection was prescribed. On the 4th she was in the same state; thirty leeches were applied to the base and sides of the neck, with slight benefit towards evening. The night, nevertheless, was very bad. In the morning respiration extremely irregular and interrupted, and inspiration so difficult, that it produced a sound like the lowing of a cow. The patient was obliged to sit up erect; venesection and sinapisms to the thighs.

On the 5th, same state. I was now consulted, and the nature of the case ascertained to be as MM. Husson, Recamier, and Broussais, had declared. Another venesection was performed, and sinapisms applied to the legs and arms. On the 6th and 7th the repeated paroxysms of dyspnœa announced the approach of death, should no energetic proceeding be forthwith adopted. The operations of hæmatosis were already troubled, and the colour of the skin was leaden. During the access, she was either pale or red; her state of agony was indescribable, her terror and anxiety extreme. Another bleeding produced no improvement, and at three P. M. tracheotomy was deemed indispensable; the operation was accordingly practised in the ordinary manner, with the exception that two small transverse cuts were made in the trachea, so as to give the opening in this tube a crucial form. Immediate relief was experienced. The pulse gradually became more regular, the paleness of the face and the somnolency diminished. She slept several hours during the night. At the morning visit, she answered "she was better." The air, which issued from the wound, had a metallic sound. Next morning, the 9th, it was perceived that the opening had a tendency to contract, and that it was partly obliterated by the desiccation of the mucus and pus on its edges. A gum-elastic cannula, seven lines in diameter, was introduced; from time to time it was moved and cleaned, and as it was found to be displaced by the least coughing, another, of ivory, was substituted for it. This again was subsequently exchanged for another little instrument somewhat like a dissection forceps, and both branches of which, by staying apart, kept the edges of the wound asunder.

On the 16th, slight purgatives, some soup, and a little sulphate of soda, were given. On the 14th, a seton was introduced into the neck. The 16th, by shutting the wound for a moment, it was ascertained that the voice was less hoarse, the respiration easier, the hissing of inspiration less intense. On the 20th the opening was enlarged, and a fibro-cartilage divided. Calomel, in the dose of five grains daily, was given from this time till the discharge of the patient on the 5th of December, when, though not perfectly cured, her condition was very satisfactory, the wound being almost closed, and the laryngeal affection nearly disappeared. On the 20th of January, a letter was received from her, stating that the opening was perfectly healed up, that the cough was extremely rare, and that the hoarseness was wonderfully diminished. On the 31st of March 1833, she came to the Hôtel-Dieu perfectly cured, and in blooming health. It is unnecessary to add further remarks on this most interesting case.

Those only who have seen Madame B. in M. Husson's wards, can appreciate the immense service conferred on a patient whom so many practitioners had abandoned.

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28. *Aneurisms.*—M. Breschet has communicated to the Royal Academy of Sciences three memoirs on aneurisms. The first treats of true aneurisms, and by the dilatation of the arterial tubes; the second of mixed aneurisms, and the third of varicose aneurisms. Although the ancients have spoken of aneurisms, it has been however only since the discovery of the circulation of the blood that we have had just ideas upon this organic affection; yet physicians do not at the present day completely agree relatively to the existence of true aneurisms, or those caused by simple dilatation of the arterial coats. Scarpa contends that aneurisms depend always upon a steatomatous alteration of the coats, and since the publication of his work, the greater part of pathologists have sided with this opinion. Others are of opinion that the dilatation of the artery happens only in the commencement of the disease, and that the rupture of the coats of the vessel constitutes the last stage of aneurism. Nevertheless M. Breschet has proved the existence of a dilatation of the arteries which lasted during the entire duration of the disease, and he has seen that this dilatation could be referred to four principal types according to the differences in the form of the expansion of the arterial tubes. He divides them thus:—1st, the true sacciform aneurism; 2d, the true fusiform aneurism; 3d, the true cylindrical aneurism; 4th, the true varicose aneurism. This knowledge of true aneurism, and of all its forms, is not, says the author, a fact of mere curiosity; it is directly united with the curative method which ought to be employed.

In the sacciform aneurism the vessel exhibits upon a point of its circumference a swelling, which may be compared to a little sac produced by the expansion of the arterial membranes. This state, considered in the ascending aorta, can only appear to be an increase of certain anatomical dispositions which are known to exist at the orifice of this arterial trunk, or towards its sub-sternal curvature. Depressions, or sinuses, which pathologists have regarded as the first degree of an aneurism, though their constant existence upon adult subjects should cause them to be considered as a natural and regular anatomical disposition, are seen above the sigmoid valves of the curvature of the aorta.

The large arterial trunks, such as the ascending aorta, the arch and the descending aorta, are especially the seat of the sacciform aneurisms. However they are also met with in the carotid arteries, the iliac arteries, and sometimes even in the arteries of the extremities. In this aneurism all the membranes are dilated simultaneously: but as the internal and middle coats, the latter particularly, have a very limited extensibility, it results that very large sacciform aneurisms do not occur; in general the size of these aneurisms is comparable to that of a filbert, or of a walnut. Nevertheless they have been seen to attain on the aorta the size of a hen's egg.

In the true fusiform aneurism the dilatation takes place upon the entire circumference of the vessel; all the membranes participate in it. The name by which it is designated, indicates sufficiently the form which it presents. The calibre of the artery, after having increased progressively during a certain part of the course of the vessel, diminishes afterwards in a manner equally insensible until it arrives at its normal diameter.

The cylindrical aneurism may, strictly speaking, be considered a variety of the fusiform, for a sudden transition from a determinate calibre to one much greater is never seen; it is without doubt for this reason that it has been almost completely neglected by pathologists; however it merits a separate consideration. In fact cases are found in which a vessel is regularly dilated for the distance of one or two feet, the cylindrical form being perfectly preserved for the whole of this length. This is observed upon the arteries of the extremities, of the splanchnic cavities, but particularly of the cranium. The vessel in these aneurisms takes a calibre quintuple, and sometimes decuple that which it ought to have. The cylindrical aneurism differs from the arterial varix in this, that in the latter affection, at the same time that the artery is more or less dilated, it is irregular, and presents sometimes here and there little sacciform tumours, and the coats of the vessel are thin, soft, flaccid, collapsing, as the coats of the veins, whilst in the other case they are rather thickened than otherwise.

It is quite common when the arteries increase their extent in one of their dimensions, that they also are enlarged in the other. However, the elongation which accompanies the dilatation in the cylindrical aneurism, does not also give to the vessels these irregularities of the arterial varix.

The large arteries present less frequently the cylindrical aneurisms than either the moderate sized, or the small arteries. However G. Hunter has found a woman with the aorta dilated from its origin at the heart, to its passage between the crura of the diaphragm. Besides its enlargement, it had become so long, that it could not descend in a straight line along the spine, as in the natural state, but it made contortions in the whole of its course.

The cylindrical aneurism in the arteries of the smallest calibre, the capillaries for example, is the aneurism by anastomosis. It resembles in certain respects that kind of alteration which constitutes the erectile tumours, which are the product of an aneurism by venous anastomoses. It is distinguished from that by the tumour which it forms, presenting pulsations isochronous with those of the pulse, whilst the other only offers a transient turgescence, owing to an accumulation of venous blood in certain states of the circulation.

The change of colour, so remarkable in erectile tumours, is not seen in those which arise from arterial anastomosis, and it is likewise a sign by which one may be distinguished from the other.

The arterial varix is a disease of the arteries entirely comparable to that of the veins, of which it has borrowed the name. A dilatation of the vessel is observed in a part more or less of its extent, often in the entire length of the vascular trunk, and of its principal branches; besides this transvere dilatation, there is an elongation of the same vessel, which becomes tortuous, and describes circuits more or less numerous and considerable. Sometimes, independently of these sudden dilatations of the whole arterial tube, may be seen upon some points nodes, or little circumscribed aneurismal tumours, which are the true sacciform aneurisms, and sometimes the mixed aneurisms.

Most frequently the coats are thinned, soft, they collapse like the varicose veins, whilst in true cylindrical aneurism, the coats have some thickness, and if they are divided perpendicularly to their axes, they remain patulous. An artery which is affected with varix resembles much a varicose vein, and may be mistaken for it, if the injection and dissection up to the principal trunk does not show the nature of the organ upon the living subject. Finally, the distinction may always be easily established by the pulsations which varicose arteries exhibit.

After having thus made known the different kinds of true aneurisms, the author deduces from his researches upon the character of this disease rules for its treatment. He endeavours to prove the inutility of surgical operations in this case, and the advantages which may be promised from the use of medicinal means.

The second memoir is devoted to the consideration of mixed aneurisms, and the observations which it contains seem to place beyond doubt the existence of a species of aneurism, long since pointed out, and the possibility of their occurrence admitted rather from the simple experiments of Haller upon animals, than from any well-observed clinical facts; and therefore pathologists have refused to believe in the reality of this morbid alteration.

According to M. Breschet, these aneurisms consist in an extension of the internal tunic of an artery, and in the passage of this coat through the apertures formed by the destruction or by the rupture of the fibres of the middle coat of the vessel. Thus, this aneurism imitates in some respect a hernia: it is this species that has been observed upon many different subjects, but it has not been perceived until after death.

This kind of aneurism does not appear singly, that is to say, that many aneurismal tumours are generally found on the same individual in different parts of the arterial system. This mixed aneurism corresponds most frequently with an alteration of the arterial parietes to a greater or less extent, and sometimes in the whole length of a limb, that which excludes the employment of every ligature, and even of amputation; for it is more than probable that the arteries of the splanchnic cavities are, in some points, affected with the same alteration.

The third memoir presents an elaborate history of varicose aneurism, and of the best method of treatment. From the facts detailed in this memoir, M. Breschet thinks that it may be concluded, 1st, that in the vascular lesions known by the name of *varicose aneurisms*, the instrument wounding through the vein which embraces the artery, happens to open the last.

2d. That there results from this lesion, sometimes only a varicose aneurism; sometimes with this aneurism is formed a false, diffused aneurism.

3d. That in varicose aneurism the anterior wound of the vein heals; but the posterior wound remains gaping, and that its borders contract an adherence with the artery, whose wound, as that of the vein, continues open.

4th. That the blood of the artery, at each systole, passes into the vein, distends it, particularly above the wound, and that, by its passage, a peculiar hissing noise is produced.

5th. That the blood of the vein passes into the artery at the time of its diastole, and that from this passage, observed upon the living subject, results most frequently the varicose dilatation of the artery in its course below the wound, the weakness of the pulse, the weakening or thinning of the parietes of the vessel, the diminution of the temperature, of the sensibility, of the mobility of the parts situated between the wound and the capillaries, whence they fall into a sort of torpor similar to asphyxia.

6th. That if these symptoms do not occur, the disease should be abandoned to itself, or the treatment should be limited to the use of a slight compression upon the limb, and upon the point corresponding to the wound.

7th. That if the serious symptoms, which have just been enumerated, should be developed, and become more violent, it is necessary to have recourse to a surgical operation.

8th. That this operation should not be limited to the use of the simple ligature between the heart and the wound, according to the method of Anel or of Hunter, because the blood returning by the inferior mouth of the vessel would reproduce the disease, particularly if the wound be recent.

9th. That this operation ought not to consist in the ligature of the artery below the wound, and in the separate ligature of the vein above this same ligature, because it would expose the patient to various inflammatory symptoms, and to the development of false circumscribed aneurism, or of false diffused aneurism.

10th. That it is more fit and more sure to place the lesion of the vessels between two ligatures, because in acting thus not only the blood is prevented from returning by the inferior end of the artery, and of reproducing the disease, but also because it opposes the entrance of venous blood into the artery, and the stupor into which this black blood throws the tissues, a stupor which is greater, and more easily followed by gangrene, because the red blood arrives in less quantity, and with more difficulty, into the same organic tissues.—*Archives Générales and Revue Médicale, October*, 1832.

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29. *Wound of the Heart.*—In the *Journ. Hebdom. No.* 97, there is related the case of a man, who, on the 29th of January, plunged a large kitchen knife into his own chest, between the fifth and sixth ribs, on the left side, a few lines from the sternum. He fell down insensible, and in that state was carried to the Hôtel-Dieu. Soon afterwards symptoms of great collapse came on; pulse scarcely perceptible; the patient could not be roused to answer questions; air entered and escaped freely from the wound during the act of breathing; but little

blood was discharged outwardly at least. By suitable treatment these symptoms were relieved. The following day reäction came on, the patient was bled and purged, and by the end of a week he was so much better that he thought that he could leave his bed. On attempting it he was seized with dyspnœa, a palpitation, and extreme anxiety. He was bled with temporary benefit. The pain at the extremity of the ensiform cartilage became very severe, occasional delirium supervened with dyspnœa and diarrhœa: these were followed by chills at midnight, increasing difficulty of respiration, &c. and on the 27th of February the patient died. On post mortem examination, there was found a transverse wound of the anterior surface of the right ventricle, five lines long and half a line in depth. There was also the usual marks of inflammation in the heart and pericardium. This case is interesting as an additional proof to those already existing, that wounds of the heart are not necessarily, and certainly not speedily fatal in all instances.

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30. *Aneurism by Anastomosis of the Temporal Artery.*—This form of aneurismal tumour has not been hitherto sufficiently attended to by the greater number of pathologists, although it is not rare in its occurrence. It happens particularly when an artery divides itself into a great number of branches within a short space. I have observed it most frequently in the branches of the occipital and temporal arteries. In every case, the disease had arisen in very young subjects, which leads one to suppose that they were usually caused by "vitium primæ formationis." In the commencement the disease is manifested by many parts near one another being affected by sensibly strong pulsations, which, upon close examination, manifestly corrrespond to the course of the branches of an artery. When the disease progresses further, it changes its original form. There arises, on the more strongly pulsating points, knotty swellings, which approach more or less to each other, and, according to the degree of their extension, form variously sized and irregular tumours, until, from further extensions, it at length forms a cluster-like swelling.

These aneurisms are accompanied with many difficulties and dangers, when they have been allowed to increase uninterruptedly, which especially appertain to the disease in question.

With respect to the curative means, I have since many years experienced that the ligature of the trunk of the affected arteries was frequently insufficient to the attainment of the proposed effect, particularly when this disease affects the branches of the temporal and occipital, owing to the free anastomosis of the frontal, temporal, and occipital branches with each other, and with those of the opposite side, supplying the aneurism with the quantity of blood which was intercepted by the ligature of the trunks.

Another circumstance also causes the ligature of the principal artery to be unsuccessful, that many of those small tumours have acquired such a degree of self-existence, (*selbständiges lebens,*) that the adhesive inflammation consequent on the operation is not sufficient to cause the obliteration of those tumours. More certain results from this method are only to be obtained by applying ligatures on not only one trunk, but upon all those which supply the aneurism with nourishment; an operation which would be extremely painful, and might be dangerous, from the violent inflammation of the scalp.

I have, instead of this operation of tying the trunk, adopted another method, in every aneurism of this kind where pressure could be exercised upon an immediate long surface, and always with the best success; which consists in making a deep incision of tolerable length in the middle of the aneurismal swelling, particularly in that part where the tumours pulsate most strongly, are most numerous and projecting, and in that direction which cuts through, in the one incision, the greater number of those tumours; the operator must instantly arrest the violent hæmorrhage in the manner hereafter described. Both steps of this operation are much less painful than the tying of the principal artery or arteries, where such careful dissection is necessary, &c. This method preferred by me is much more certain in its results, inasmuch as it is performed upon the affected part, and thereby causes the adhesive inflammation to be much more perfect; further, it renders unnecessary all secondary operations, and, under ordinary circumstances, the cure is effected commonly in the short space of some weeks.

The history of the case which has given rise to the preceding observations, and which was witnessed by Von Walther and other foreign physicians, is as follows:—

A boy, aged ten, of a scrofulous habit, suffered a good deal during the last four years, (probably from his birth,) from painful throbbings in the right temporal region. On examination, I found there an elastic and very unequal swelling projecting somewhat more than an inch, and towards the circumference rather firmer; the only tumour which pulsated strongly ceased to do so on firm pressure, which caused pain, but whereby the bones could be plainly felt, and the parts reäcquired their normal condition; the point of the tumour occupied the middle of the parietal bone, from which point it extended itself on all sides in a circle whose diameter was at least four inches.

From this tumour the head had the appearance as if the right half were larger than the left. When the hair was removed, the patient fixed, and the apparatus for arresting the hæmorrhage was ready, I made an incision in the tumour from before backwards, three inches long, by which the greater number and largest of the aneurismal tumours were cut across. A quantity of arterial blood was lost; but immediately a soft sponge, extending beyond the edges of the tumour, was firmly pressed, and the pressure was continued some seconds with undiminished vigour, so that the lips of the wound and contiguous parts were emptied of blood as much as possible. Whilst the operator had one hand engaged by exercising pressure on the sponge, he seized with the other a tolerably large compress, removed the sponge, and at the same moment applied the compress, before hæmorrhage could again occur, between the lips of the wound, and then covered the whole tumour with a sponge extending beyond its edges, of about one inch thick, which was made fast by means of adhesive straps and a bandage. After some hours I diminished the pressure which at first was necessary, by undoing some of the folds of the bandage.

On the second day the sponge was replaced by compresses, in order not to cause either too much pain or inflammation by immoderate pressure. Very slight antiphlogistic measures were necessary to subdue some pain and fever consequent on the inflammation.

On the seventh day the compresses were separated by a copious suppuration, and the wound soon healed, its edges being brought together by adhesive straps. No secondary hæmorrhage took place. There was not the slightest trace of pulsation in the circumference of the tumour, and the pain and swelling had entirely disappeared.—*Lond. Med. and Phys. Journ. April,* 1833.

31. *Aneurism of the Thyroid Gland, cured by Ligature of the two Thyroid Arteries.*—This operation, although proposed at an earlier period, was firmly established on principle, and successfully performed in 1814 by P. von Walther. It was first performed in Berlin, in 1819, at my hospital. When the gland, as in some cases, must be removed, owing to its size impeding respiration, the operation for its total extirpation is rendered the more difficult and dangerous; and therefore the indications for putting Walther's method into practice should be sought after with the greater zeal: this method is peculiarly fitted for the removing of the aneurismal state of the gland, as is proved by the following case.

An officer of the Prussian army suffered, according to his own statement, during the last six years, but probably since his childhood, from an enlargement of the thyroid gland, which latterly rapidly increased in size, so as, from its great weight, &c. to render him wholly unfit for service. The pulsations of the thyroid arteries, which were considerably enlarged, could not only be felt, but seen distinctly; the surface of this soft, elastic, and uneven tumour was covered by numerous varicose veins of considerable size, and pulsation to a greater or less degree could be perceived by the least pressure on any part of the tumour. It extended from the superior margin of the thyroid cartilage down to the sternum, and its extent from side to side was such as to leave the mastoid muscles uncovered only at the superior extremities: it protruded forwards to the same extent as the chin. The voice was greatly impaired, and much inconvenience to the head arose from it; even slightly sudden motions were attended with a painful difficulty of breathing.

Under these circumstances, my patient was determined to undergo whatever might diminish his sufferings: and accordingly I performed the operation on the 19th of July, 1831. I commenced the incision at about the anterior edge of that part of the mastoid muscle which corresponded with the superior thyroid artery, immediately over the tumour, and continued it about two inches backwards, dividing the skin and platysma together. Having separated the edges of the wound, I succeeded, with a blunt instrument, in exposing the trunk of the artery: it appeared to be three or four times larger than natural, and pulsated violently. On the application of the ligature, the pulsations of the artery ceased entirely, and those of the tumour were considerably diminished. The operation on the opposite side was performed in precisely the same manner: indeed, the pulsation did not cease to the same degree; but, after some minutes, a remarkable and a manifest flaccidity of the entire gland took place.

Both wounds healed by first intention, excepting, of course, the track of the ligatures. The ligature of the right side came away in eight days; that of the left in ten days. In proportion as the adhesive inflammation, (*obliterende entründung,*) extended itself from the parts operated upon to the gland, in the same ratio did the pulsation of the latter become more and more indistinct, and the circumference of the tumour, which itself felt firmer, was greatly lessened in extent.

On the eleventh day after the operation, arterial hæmorrhage occurred, though the wound was scarcely so large as would admit a pea: the hæmorrhage was of that kind which we see sometimes occur after operation for aneurism. It was stopped by pressure of the finger, and afterwards by a graduated compress applied by means of adhesive plaster; however, notwithstanding, it occurred periodically until the fourteenth day, five times. By means of the blood effused in the cellular tissue in and about the wound, a perfect cure ensued, and the patient was perfectly recovered on the fifth week. The tumour then had lost two-thirds of its circumference, and pulsation had entirely ceased. The patient asserted that he was altogether free from every former inconvenience, and that he could wear the ordinary regimental collar without its causing, in any motion whatsoever, the slightest inconvenience; he therefore returned to his regiment at Magdeburg. A short time since, (in February 1832,) eight months after the operation, I heard from him, relative to his continued enjoyment of good health.

In the only other case in which I performed this operation in 1819, its result is directly opposed to this latter case, the tumour having completely resisted the operation of tying the artery, and, from the extreme danger its extreme size caused to the life of the patient, it was necessary to remove it entirely. During the operation, the whole anterior side of the neck, with trachea and the right carotid artery was exposed: a portion of the gland was situated behind the larynx, and thirty-five arteries were obliged to be tied before the hæmorrhage could be stopped. (See *Tractatus de Glandula Thyroidea,* &c. by A. Hedenus, Leipsic, 1822, p. 276.)

The cause of such different results should next be inquired into. In the first case, that of 1819, the aneurismal condition was manifestly present, but only, as I conceive, as accompanying the enlargement of the gland; the enlargement of the vessels progressed equally with the hypertrophy: whereas, in the latter case, the enlargement of the vessels evidently predominated, so that the enlargement of the affected organ was only conditional thereto. The thyroid arteries, in both cases, were enlarged, but those of the latter considerably more so, judging from their stronger pulsations, and also that the pulsations were distinctly to be seen. Without doubt the pointed out and symptomatically established differences account principally for the contrary results of the operations.

The difference in the manner of performing the operations might have certainly contributed somewhat to it.

In the first case I only tied the stronger pulsating artery of one side: in the latter, one on each side which caused a greater diminution in the supply of blood, and an inflammation of greater intensity and extent, owing to the additional incision and ligature.—*Lond. Med. and Phys. Journ. Feb.* 1833.

32. *Case of Ruptured Bladder.*—A very interesting case of this accident was recently brought into the Hôtel-Dieu, and afforded to M. Dupuytren another occasion, for the display of his astonishing diagnostic talent. A young man, æt. 25 or 30, was brought into the hospital labouring under the following symptoms. Face shrunken, extremities cold, pulse hard, small and frequent; and violent pain in the hypogastric region, which was likewise very much swollen. He stated that after having drank a large quantity of white wine with one of his comrades, a dispute had arisen, and he had received a violent kick in the lower part of the abdomen, which was soon followed by a discharge of blood from the urethra. Under these circumstances, M. Dupuytren pronounced the existence of a rupture of the bladder, and stated that death in a few days must necessarily ensue. He had seen several similar cases, and in all, death took place either on the fourth or sixth day after the occurrence of the accident. Nevertheless, every attention was shown the patient, he was copiously bled, and placed upon an absolute diet, general baths as well as semicupiæ were also resorted to. By these remedies his condition was so much improved, that M. D. began to think that he had been mistaken in his diagnosis, and that a cure would eventually take place. About this time one of the patient's friends very imprudently brought him some sweatmeats, and other articles of food, of which he partook immoderately. He had scarcely swallowed them, when symptoms of an acute peritonitis made their appearance, and in about thirty hours afterwards, he was a corpse. This took place on the seventeenth day from the occurrence of the accident.

Autopsy.—Upon opening the body, two ruptures situated on the anterior portion of the bladder, one of which was an inch and a half in length were discovered. There was also an effusion of urine mixed with pus, occupying the inferior pelvic straight. Those convolutions of intestine which were in the neighbourhood of this effusion, were found adhering to each other, and there were also traces of adhesions between the intestines and bladder. This viscus was empty, small, contracted, and equalled in size a small pear. There were no traces whatever, of the previous existence of a general peritonitis.

This case should particularly attract the attention of the medical jurist. It goes to prove that a kick upon the hypogastrium, at a time, when the bladder is full, may produce a rupture of this organ, and cause in all probability death in the space of two or six days from the occurrence of the accident; and although the case is probably unique in its phenomena, it nevertheless shows, that a rupture of the bladder, may not only be unaccompanied by dissolution, but that even a cure is not impossible. If the patient had not committed the imprudence of eating too much, and in this way excited inflammation of the parts, in eight or ten days more, the adhesions would have been strong enough to prevent any effusion of urine. Hitherto, all persons injured in a similar manner, have died previous to the sixth day; here, moreover, the patient lived until the seventeenth after the occurrence of the accident, and seemed to be in a fair way of recovery.

33. *New Hemostatic.*—Hitherto we have only known either chemical or me-

chanical means for arresting such hæmorrhages. It appears, on the contrary, that, by Binelli's method of treatment, which we recommend to the notice of our contemporaries, there is exercised upon injured blood-vessels, and upon the blood issuing from them, a nearly indirect tonic, *(unmittelbar dynamischer,)* influence; by means of which, hæmorrhages are stopped without ligature or compression of any sort, without the use of the known conglutinations, astringents, or caustics, and does not cause any of those changes of the wounded vessel which we generally see arise after the application of the ligature, or of powerful chemical caustics. The means discovered by Dr. Fidele Binelli for effecting this purpose is a clear and perfectly transparent water, almost tasteless, having a slightly empyreumatic odour, in which the senses cannot perceive any distinct chemical agent; namely, neither an earth, a salt, an alkali, an acid, nor a metal. The first public trials, to prove the efficacy of this water in arresting hæmorrhage, were instituted in Turin, in 1797, by order of the government; the results of which were considered favourable. Soon after, Binelli died, and the secret for making this water also perished. In the years 1829 and 1830, the successors of Binelli affirmed that they had again discovered this secret, and new trials were instituted, at which I was prevented from being present by an accident which occurred to me during my travels in Italy that year.

The information I received respecting the results of those experiments was highly favourable; rather too much so, in order that I should place implicit confidence in them. I returned to Berlin, taking with me a small quantity of the "aqua Binelli," and waited patiently for a suitable opportunity to put it to the test of experience, which was accidentally afforded me in the form of a small unimportant wound, followed by a slight hæmorrhage. I was so surprised at the effects of this water, when applied to the wound, that I requested my friend, Dr. Karper, an Italian physician, to send me, through the Prussian ambassador residing at Turin, a considerable quantity of the "aqua Binelli," in order that I might be enabled to make further experiments. When I obtained it, I was enabled to make other trials; the results of which are detailed in the following compressed notice.

In the first place, I tried its effects upon wounds of the larger blood-vessels of animals. I exposed various blood-vessels of young cats: in one, the femoral artery; of another, the same, with its accompanying vein; of another, the carotid artery; and, lastly, the same, with the internal jugular veins. These were cut differently, some longitudinally, some obliquely, some transversely, and others completely across.* The violent hæmorrhage hereby induced yielded, without exception, and without any other means being employed, so soon as a charpie or lint, steeped in the "aqua Binelli," was applied and pressed moderately against the wound for five or ten minutes. Encouraged by this success, I selected larger animals for the same experiments, such as dogs and sheep, at which Professor Rudolphi, Dr. Schulz, physician general, Drs. Urebel, Büttnerr, Bahn, and Mr. Halbach, veterinary surgeon-in-chief, and many others, were present. The results from the latter were as favourable as those from the former: neither injurious inflammation, nor any other prejudicial reäction of the constitution, were remarked; the cicatrization of the wounds proceeded regularly, and all the animals experimented upon perfectly recovered.

Further encouraged, we determined on trying its effects upon man: 1st, (before the assembled class, in the operating theatre,) after amputation of a finger, where the two digital arteries emitted blood very freely. 2d. In a case of a wound of the hand, caused by a cutting instrument, which entered deep between the metatarsal bones of the thumb and indicator finger, and where the hæmorrhage could not be arrested by means of compression, or the tourniquet, without the fear of causing gangrene. 3dly. After the extirpation of a hardened inguinal gland, from which a parenchymatous hæmorrhage ensued. 4thly. After amputation of the thigh, on account of a scrofulous knee-joint: after the operation, the blood issued with great force, on the least relaxation of the tourniquet, from the crural, perforating, and other muscular arteries, also from the vein. In each case the hæmorrhage was quickly and permanently arrested by the "aqua Binelli," without any other aid, and did not cause the least pain on its application, nor produced any discoloration on the surface of the wound; neither eschar nor any other local or general disagreeable effect.

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* It is proper to state, however, that we have seen the femoral artery of a dog entirely divided with a sharp bistoury, and very trifling hæmorrhage followed, although *no means whatever* were had recourse to, to restrain the hæmorrhage. In two days the animal appeared in perfect health and strength.—*Editors.*

The apparent, remarkable, and quite peculiar effect of the water merits all our attention, as an important object of the healing art may thereby be obtained. Our experiments excited a very lively interest, particularly so as we had not hitherto succeeded in our investigations as to the composition of this water. When all my efforts to discover its composition by various chemical reägents were fruitless, I requested experienced analytical chemists to undertake a more searching investigation of it. Drs. Lindes and Runce, professors of chemistry, Mr. Kleist, chief apothecary, and some others, notwithstanding all their efforts, came to the conclusion that, by chemical analysis, neither alkali, salt, acid, nor a metal, can be discovered in the "aqua Binelli." Whether hereafter the celebrated Berzelius, and other chemists, to whom some of the water has been sent, will succeed in discovering its composition,* remains to be determined.

I have received, from various places, waters possessing an empyreuma, and corresponding in external appearances with the "aqua Binelli," but which, when tried on animals, proved wholly inefficacious.

With respect to the most essential organic changes observed after the employment of this water, I shall for the present only communicate the appearances presented on two post mortem examinations. The above-mentioned case of amputation afforded the first opportunity, having died the tenth day after the operation. (This patient entered the hospital suffering under violent hectic fever, caused by phthisis ulcerosa pulmonum, and profuse suppuration from a fistulous opening at the knee-joint: the operation was only performed at the extreme and urgent solicitations of the patient himself.) The second was the carotid artery of a horse, which was cut in the direction of its axis, by Dr. Hertwig, and cured by the "aqua Binelli:" the horse was killed fifteen days after the experiment.

A lithographic drawing is attached to the annual report, representing the stump, with the artery and two veins, (femoral and saphena,) laid open for some inches of their length. The extremity of the artery is perfectly closed by a thrombus, which is cone-shaped and three inches long. A similar, but much shorter coagulum was found in the femoral vein, its cone, or upper extremity, only reaching the nearest valve; from which point another thrombus arose, many inches in length, having its cone at this valve, and its larger extremity towards the heart. The thrombus formed in the saphena vein was similar to that of the artery in every respect. The parietes of the vessels were neither thickened, swollen, nor, on their external side, enclosed by coagulated lymph, as Perot has observed to be generally the case after the obliteration of arteries by ligature. The internal side of the vessels only differed from the normal state by presenting delicate transverse bands, like folds, which were particularly distinct in the artery, and extended somewhat higher than the upper extremity of the coagulum.

A section of the artery of the horse is also represented, showing a coagulum which completely fills the artery to the same extent as the original longitudinal section, thereby closing the wound, and terminating, cone-shaped, at either extremity, above and below the wound.

We refrain from laying before our readers further information at present upon this subject, until all the analyses undertaken to discover the composition of the "aqua Binelli" shall be completed, and a greater number of comparative clinical observations shall be collected.—*Lond. Med. and Phys. Journ. Feb.* 1833.

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* Berzelius has failed.

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34. *Prolapsus Ani.* Extract from a clinical lecture by Baron Dupuytren.—Prolapsus ani consists of an eversion of the inner membrane of the rectum, which, forming a kind of invagination, descends within itself, and at length projects beyond the sphincter to the extent of two, three, four, five, or even six inches. Usually the intestine comes out every time the patient goes to stool; in other cases it descends only when the patient has remained in the standing posture for a long period; while, in other cases, the gut may become everted at any time, which shows that the relaxation is carried to a great extent, and that prolapsus takes place without any effort on the part of the person affected. In general the gut is easily returned; but sometimes the sphincter ani produces such a degree of strangulation, that the projecting membrane becomes at first dark-red, then black, and at length falls into a state of gangrene. Should you happen to see such a case of strangulation as I have described, you are to endeavour to reduce the gut in the following manner:—The patient must lie on the abdomen, and the pelvis must be raised conveniently by pillows placed between the thighs; some pledgets of wet lint are then to be placed round the base of the tumour, and gentle pressure exercised in order to reduce its volume. After this a compress should be placed on the centre of the orifice of the intestine, which is to be returned by gentle pressure into the abdomen. When reduction by this means is altogether impossible, we may be compelled to have recourse to scarification of the gut, but as the employment of cutting instruments may be attended by ulceration or inflammation of the large intestines, they are to be avoided as much as possible. The same observation is applicable to the use of leeches, which may be followed by external or internal hæmorrhage, ulcerations, &c.

"But, though the reduction be accomplished, we have still to combat the tendency to prolapsus, which depends on the weakened action of the sphincters, or perhaps on certain causes producing strong contraction of the muscular fibres, inverting the large intestines, such as chronic inflammation. In the latter case, our first care will be to combat the inflammatory action, which gives rise to the disease; but when the prolapsus depends on a want of action in the sphincter ani, the best method of cure is that which has for its object the diminution of the cutaneous and mucous parts which surround the anus. The practical question to consider is, how can we best assist the action of the sphincters? Cold baths alone are frequently sufficient for this purpose; but the remedy is tedious, expensive, and requires constant attention. A better mode consists in removing some of the folds of skin, which surround the margin of the anus, so as to diminish the extent of the soft parts which dilate when the patient goes to stool, and to determine adhesion between the skin and neighbouring parts. When the patient is placed in a convenient posture, the operator, holding in his hand a common forceps, (with the points rather blunt, so as not to pinch the skin,) seizes successively several of the folds of skin which surround the margin of the anus in a radiated manner, and with a scissors curved upon its flat side, he excise several of these folds as far as the margin of the anus, or even two or three lines further; if the prolapsus be considerable, and of long standing, it will be necessary to extend the excision an inch within the anus; the sphincter ani must not be touched, as the operation concerns only the external tissues."

M. Dupuytren has never seen any hæmorrhage or unpleasant circumstance accompany this. The pain of the operation instantly occasions a strong contraction of the sphincter ani, and the inflammation extends for a slight way to the neighbouring tissues. Usually there is no stool for the first few days after the operation. About the eighth day the inflammation begins to subside, but the excretion of fæcal matter continues to produce pain and violent contraction of the sphincter ani. M. Dupuytren has never seen the prolapsus reöccur after the operation.

At the conclusion of the lecture, the Baron proceeded to operate in the manner he had described, upon a young child of three years and six months old. The gut projected about three inches beyond the margin of the anus, and came down every time the boy went to stool. M. Dupuytren having returned the projecting bowel, nipped off with the scissors four or five bridles of skin round the margin of the anus. The little patient lay perfectly quiet, and seemed to suffer so little pain, that immediately on getting up he offered to the Baron an orange, which he had received to keep him quiet, and pronounced his "adieu" with an undisturbed voice.

4. The boy lively, and seeming to suffer little or no pain. A plug has been placed on the anus, and supported by a bandage. No stool since the operation.

5. The little patient seems to suffer some pain to-day when he moves, but is otherwise quite well; has passed two stools since the last visit. The gut has not descended, or even approached the margin of the anus.

7. No descent of the gut; goes to stool regularly, but seems to suffer some pain.

11. The uneasiness has gradually diminished; no accident of any kind has occurred, and the boy was dismissed to-day apparently perfectly cured.

29. To-day the boy was brought by his mother to be examined at the hospital. There had been no return of the prolapsus, or appearance of the internal membrane at the anus, although for the last few days the child had been affected by a diarrhœa, which compelled him to go frequently to stool, and occasioned much straining.—*Lancet, April 27th,* 1833.

35. *Amputation at the Coxo femoral Articulation.* By M. Blandin.—The patient, a girl, æt. 15, was brought into Hospital Beaujon, on the 25th of last January; she presented as yet none of the phenomena of puberty, and her general health seemed to have undergone no material alteration, though the experienced eye could easily recognise the melancholy ravages, that long and continued suffering had already effected. The right knee was found tremendously hypertrophied, being nearly four times its normal size, the tumefaction gradually diminishing both in the leg and thigh, though in the latter it extended nearly as high up as the base of the great trochanter. She suffered the most excruciating pains, from which only momentary relief could be obtained by the exhibition of powerful anodynes. The skin covering the joint was much thinner than natural, had apparently lost its elasticity, and seemed ready to burst, so great was the degree of distention. A number of veins considerably dilated, could be traced by their blue colour, lying immediately beneath the surface. The leg itself was exceedingly atrophied, scarcely any vestiges of the soft parts remaining; thus forming a striking contrast to the superior portions of the member. The evening of her entry into the hospital, in consequence of some movement executed whilst lying in her bed, a cracking noise was produced, and upon examination, it was found that the os femoris had been fractured near the junction of its middle and inferior thirds. In a short time the swelling increased in a very sensible degree, accompanied by the most violent and acute pain; the slightest touch drew forth from the patient, the most piercing cries, and it seemed impossible for her to support such agony, for any length of time. M. Blandin now saw the patient for the first time, and after an attentive examination of her case, declared, that the only remedy left was amputation at the hip-joint. The patient was, however, at this time, in a state of such extreme nervous excitement, that the operation was deferred until the next morning. In the meantime, anodynes were administered both externally and internally, by which means a slight degree of calm was produced. M. Morjolin also saw the patient, and concurred with M. Blandin in the opinion, that but one course remained to be pursued; viz. amputation at the coxo-femoral articulation. Accordingly the operation was performed on the 28th of January, by M. Blandin. The patient was placed in the position recommended in similar cases, and which it would be useless to des-

cribe. The femoral artery having been first tied almost immediately at the crural arch, M. B. proceeded to form his internal flap, from the integuments and muscles of the inner face of the thigh; several large vessels were of necessity divided, these were immediately secured by the ligature, and among the rest the femoral vein, from the quantity of blood which escaped from it, was obliged to be tied, though very much against the inclination of M. B. who dreaded the consequences usually attendant upon the ligature of large veins. The joint was next opened, and an external flap much shorter than the internal one, formed of the muscles on the external face of the thigh. The parts were then brought together by sutures and adhesive straps. The operation was most skilfully and dexterously performed. It were worse than useless to enter into a detail of the subsequent treatment of the case, as it was entirely pro re nata, suffice it to say, that on the eleventh day after the operation the patient died, whilst labouring under all the symptoms of hectic.

Autopsy. The femoral vein was found inflamed at no point, except that operated upon by the ligature, which *had not divided its coats*, and was filled with clotted blood as high up as the superior straight of the pelvis. The internal iliac vein at its point of origin, was evidently inflamed, and contained pus; its internal membrane near the origin of the vessel was softened, whilst higher up it was of a vivid-red colour; the redness ceased at its point of junction with the external iliac. The blood which it contained was very fluid, and of a black colour. The substance of the lungs, particularly that of the right, contained numerous grayish spots, composed of a matter resembling that of tubercles in a softened state. The patient never having suffered from any affection of these organs, and presenting none of the attributes of the scrofulous diathesis. M. B. concluded, and based his opinion upon numerous similar cases, that the spots were in reality composed of pus, and that it was there deposited through the medium of the general circulation. A circumstance favouring this conclusion is, that the liver likewise contained similar points, and according to the experience of M. B. the liver next to the lungs is the organ most subject to the purulent depositions alluded to, in cases of phlebitis.—*Transactions Med. Dec.* 1832.

36. *Extirpation of a Tumour weighing seven pounds developed in the Upper Internal Portion of the Thigh, followed by Death.* By M. Roux, Professor at La Charité.—The subject of this, a young man, æt. 29, of good constitution, had suffered from a tumour which occupied the superior internal face of the left thigh for five years, and which was accompanied by severe lancinating pains. When he entered the hospital, the tumour equalled in size an adult head, was of an oval shape, and extended from the fold of the groin to the middle of the thigh. Its base was large and immoveable, its tissue dense and resistant, whilst the skin covering it retained its natural appearance. It was difficult to decide positively, with regard to its nature; but M. Roux strongly suspected that it belonged to the class "Lupus," this suspicion was subsequently confirmed by an examination of the part. It having been decided that an operation was the only remedy that promised success, it was accordingly performed. The tumour was found located between the vastus externus, and a portion of the third abductor of the thigh, and firmly attached to the tuberosity and ascending ramus of the ischium. The necessity for preserving the above-named muscles entire, rendered the operation exceedingly difficult and tedious, and for fear of wounding important parts, it was performed almost entirely with the fingers of the operator, the knife being used only in separating the tumour from its connexions with the os ischium. During the operation a large artery was divided, but from the relative position of parts being so much altered, M. Roux was unable to decide whether or not it was a branch of the circumflex, or merely an artery developed in the tumour and destined to its nutrition. Although it was impossible to pass a ligature around it, but very little hæmorrhage resulted from its division. The crural artery passed without the range of the tumour, and could easily be separated from it. Upon turning out the first, another tumour about the size of the fist, likewise adhering to the tuber ischii, though entirely

distinct from the larger, was discovered and extirpated. The dressing was composed simply of compresses and rollers, appropriately arranged. Both tumours presented a similar organization, and were composed of a straw-coloured, homogeneous tissue, in which gelatine predominated, enclosed in a hard, resistant parenchyma, which gritted like cartilage under the scalpel. It had no analogy to scirrhous tissue, in which a marbled arrangement, and sometimes purulent cysts, and likewise encephaloid degeneration in numerous points, are discovered, but rather resembled the substance of uterine polypi. The larger of the tumours weighed nearly seven pounds. The patient died two days after the operation, apparently exhausted by the excessive pain necessarily dependent upon so extensive an operation.—*Ibid.*

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37. *Cases of Diffused Inflammation after Bleeding in the Foot.*—*Case* 1. A young woman was ordered to be bled in the foot, at the Hôtel-Dieu, in consequence of amenorrhœa.

The operator made several attempts to open a vein at the external ankle, but failed; the saphena vein was afterwards opened. In a few days appearances of spreading inflammation of the skin and cellular substance showed themselves, and afterwards great tumefaction, pain, and general disturbance. Leeches and poultices were applied; but the disease became worse and worse, and the patient was delirious, and suffered much from vomiting, purging, and extreme sensibility of the abdomen. She was brought into the surgical wards on the 20th day from the commencement of the symptoms. Bleeding from the arm was immediately ordered, and two long incisions were made along the foot; much fetid and sanious matter flowed out; and a third incision was made at the upper and inner part of the leg, where a large purulent collection had formed. Thirty leeches were applied to the epigastrium. Gangrene of the back of the foot came on; and an intense inflammation had invaded the upper part of the thigh. Forty leeches were immediately applied to the part. A long incision was made on the outer side of the thigh. It was not till the end of the sixth week that the inflammation of the limb had entirely ceased; the tendons of the extensors of the toes sloughed off. In two weeks more most of the incisions had healed, and the large exposed surface of the foot was healthily granulating. In six weeks more, she was able to leave the hospital, but the limb as yet was little able to execute any movements.

Case 2. A woman chanced to prick her finger with a thorn; inflammation of the arm speedily came on, and also symptoms of extreme gastro-enteritic irritation. When she was brought to the hospital, three weeks after the accident, she could give no account of herself; the whole limb was enormously swollen, and all the signs of a very aggravated typhus were present. She was immediately bled, and the part leeched and poulticed. Five days after this date, she began to complain of pain in the knee: when it was examined, a distinct fluctuation could be felt; free incisions were made at several parts; but as the inflammation abated in the arm, it increased in the leg, and all the disturbance of head and abdomen was renewed; she died on the ninth day after entering the hospital.

Remarks.—The very formidable disease, which is illustrated by the two preceding cases, sometimes attacks the head, and is then not unfrequently fatal. It is of importance to observe that when the cellular tissue between the pericranium and the occipito-frontalis aponeurosis is the seat of the disease, and when it has gone on to suppuration, so as to detach the integuments from the subjacent parts, these integuments are not so liable to fall into a state of sloughing as the integuments of the extremities, and of other parts; and why is this? Because the blood-vessels, namely, the branches of the frontal, temporal, and occipital arteries are so very intimately connected with the skin of the head; whereas in the arm and leg, &c. the nutritious arteries of the skin are mostly small vessels which pass to it from the subjacent textures, and through the subcutaneous cellular substance; hence, when this web is destroyed by suppuration, the permeating arteries and veins are no doubt involved at the same time: in the case of the scalp it is otherwise; for its vessels directly appertain to it, and not to the pericranium and bone. It is of much consequence to ascertain whether the pus has not injured the pericranium; for when this membrane is destroyed, recovery is very rare; and when it is not, we may very generally entertain better hopes. Even in the worst cases, the scalp seldom becomes lifeless or sloughs; and for the reason of the peculiar arrangement of the blood-vessels above-mentioned. M. Dupuytren has seen in his vast practice only two cases of actual gangrene of the scalp.—*Med. Chir. Rev. from Journ. Comp. Sept.* 1832.

38. *Two Cases of Hernia, in which the Operation was performed, although there were no External Swellings.*—A man, aged forty, had an inguinal rupture on each side; the one of twelve years, the other of three years standing. After a violent effort, the former, or that on the left side became suddenly enlarged and very painful: it was after some time reduced, but the symptoms of strangulation continued, and on the 5th day he was carried to the Hôtel-Dieu. The abdomen was very tender, and he suffered much from hiccup, fæcal vomiting, and pains of the bowels; there was no outward appearance of any herniary tumour; the abdominal ring when examined, were found more open than usual; there was no fulness in the right groin on the following day, and when the part was pressed, it was very painful. Dupuytren cut down cautiously to ascertain the state of things; he opened a small smooth-lined sac, from which a good deal of serum issued; but there was no trace of gut, or of omentum: when the finger was passed up into the abdomen, several adhesions could be distinctly felt. Dupuytren immediately operated upon the other side; the second incision opened a small sac, which contained a fatty mass, mistaken at first for omentum; but by making the patient cough, a layer was observed beneath it, and when this layer was divided, much bloody serum flowed out. Dupuytren was now satisfied that the strangulation existed upon this side, in consequence of the difference of the serum from that which was noticed on the other side. In the sac a small portion of inflamed omentum was found, and on introducing the finger up the ring, a circular bridle could be felt; the sac was gently pulled outwards, and along with it a small portion of gut; a probe bistoury was cautiously introduced, and this bridle was divided upwards and outwards. The patient ultimately recovered.

Case 2. A man was brought to the Hôtel-Dieu in an apparently dying state; he was hiccuping, vomiting, with cold extremities and tumid painful belly. It was with difficulty that he could tell that he had long suffered from a double rupture; but there was no outward sign of any swelling. The question was, whether the case was one of peritonitis, or of concealed hernia. Dupuytren ordered the patient to be bled, and to have repeated enemata given. Several copious alvine evacuations were procured, the vomiting ceased, but the hiccup continued. On the following day he was considerably easier and more collected, so as to be able to give some account of the progress of his malady. He had laboured under a rupture on each side for eleven years, they had never much incommoded him till the day before he entered the hospital, but suddenly after an exertion they became painful and irreducible for some time; both however were speedily returned by the taxis; yet most of the symptoms of strangulation continued. An incision was made over the right inguinal ring, and a smooth sac, which was recognised as a herniary one, was laid open; a grooved sound was passed upwards, and bloody serum then flowed out; the sac was drawn a little out, and its neck was found to be puckered, and drawn together like a cicatrix. It was divided, and the finger then might be easily carried inwards. The patient quickly recovered.

Remarks.—In such cases, as the above, are there any signs by which the surgeon can determine, after the reduction of a hernia, whether strangulation continues or not within the abdomen? The abdominal ring should be carefully examined, to ascertain whether it be large and open, whether any pain is felt there, when the finger is firmly pressed upwards and outwards.—*Ibid.*

CHOLERA.

39. *On the use of Cold Water in Cholera.*—By Dr. Hardwicke Shute, of Gloucester. (In a letter to the Central Board of Health.)—My attention was early directed to the fact, that no good, or rather as it appears to me most decided injury, was done by the administration of brandy, (or alcohol in any of its multifarious forms,) and even by the use of the stimulant emetics, when they were retained, as frequently happened in the advanced stages of collapse. In endeavouring to account for the deaths which commonly occurred in the course of a few hours, I was forcibly struck with the marked analogy which exists, as far as the state of the pulse and diminished animal heat are concerned, between the collapse of cholera and the impaired vital energy which results from starvation or long-continued exposure to excessive cold. Now it is an established fact in therapeutics, that the administering of a stimulus, disproportioned in strength or extent to the impaired vital energy of the system, is, under such circumstances, certain death; and that mortification of a frost-bitten extremity uniformly results from the hasty application of too great a degree of heat, or other stimulant, to the affected part. The treatment which I have adopted in the second and third stages of cholera is founded on the analogy already mentioned, and on the general principle that the necessity of diminishing or absolutely withdrawing every kind of stimulus is greater in proportion to the degree of collapse, or sinking of the vital powers.

The circumstance which particularly directed me to the remedy I employ, was the thirst, the excessive and inordinate desire on the part of the patient for water, for cold water more particularly, and I may almost say cold water exclusively; all other liquids being taken with reluctance, if not absolutely refused. I shall therefore state in general terms, that the free and unrestrained allowance of cold water, which, in the most marked cases of recovery, was taken to the extent of some gallons in a few hours, is the circumstance to which I wish particularly to direct your attention. If I add to this the abstraction of all kinds of stimulant remedies, both external and internal, even to the exclusion of friction, or the application of heat in any form, I have stated in general terms the whole plan of treatment, which, as I shall show, has succeeded in twelve out of fourteen, if not in twelve consecutive cases of the third stage of cholera. I am fully aware that the number of cases is too few to justify any thing like a general conclusion; but you will, I think, agree with me that they are not too few to justify a more extensive trial of the plan proposed. And it is with this view that I now address you; hoping that through your influence such trial will be made on a more extensive scale than is in the power of an individual.—I shall now mention some particulars which appear to me calculated to throw additional light on the plan of treatment I propose, it being understood that my observations apply to the *second* and *third*, particularly to the *third* stage of cholera, "when the pulse at the wrist has ceased, or become almost imperceptible."

The windows of the cholera hospital in Gloucester are large and numerous in proportion to the size of the apartments, and are open night and day. The doors open immediately into the garden, and are not suffered to be closed, so that the patients may be considered as living in the open air. I may add that the fires are purposely kept so low as to influence as little as possible the temperature of the room. The covering of the patients is confined to a light blanket and rug; and it seldom happens that some part of the body, particularly the breast and shoulders, is not constantly exposed. Under these circumstances, a pint of cold water is offered to the patient, and very frequently two-thirds of this are taken at a draught. In what I consider the most favourable cases, vomiting is almost immediately produced, and the patient in two or three minutes again calls for and eagerly drinks the same quantity with the same result. This is often continued for hours, until gallons of water have been taken, and the greatest proportion, (but I conceive not all,) rejected by vomiting. In other cases the patient is too insensible to ask for the water; and under these circumstances, it is offered every ten minutes or quarter of an hour, and most commonly drank with avidity. If gruel or tea be offered, the patient most frequently refuses it, and generally speaking no kind of nutriment is taken in any form until the period of convalescence. I consider it of great consequence that the vital powers should be restored as gradually as possible; and it is of importance to remark, that the progress towards recovery has been in all cases remarkably gradual and uniform. In the first six or eight hours no amendment can be observed except some diminution in the purple hue of the extremities; in the next six or eight hours there is a manifest improvement in the countenance of the patient, and more disposition to sleep, but often no restoration of the pulse or increase of temperature. In some cases the pulse has not been perceptible for twenty-four or thirty-six hours. From this period the pulse, the animal heat, and the secretions are very gradually restored, and at the end of forty-eight hours, or the third day from the commencement of the treatment proposed, the patient is convalescent, and in all cases without consecutive fever. I mention these circumstances particularly, in order that the practitioner may not become impatient. He should, in my opinion, be satisfied, and make not the least alteration in the plan proposed as long as the patient is merely not getting worse.

It would be inconsistent with the professed object of this memorial to offer any remarks upon the pathology of cholera, or upon the *modus operandi* of the treatment here recommended. But I cannot refrain from briefly suggesting, first, the importance of knowing;—that in the collapsed stage of cholera, cold may be extensively applied to the coats of the stomach without diminution, to use the most cautious term, of the vital energy. Secondly, that cold so applied has a manifest tendency to check the serous secretion, or perhaps, more correctly speaking, excretion or exudation of serum, which characterizes the disease. Thirdly, the acknowledged effect of vomiting in checking diarrhœa, equalizing the circulation, and emptying the vessels of the liver, and consequently the importance of not checking a natural action which has a conservative tendency. Fourthly, the probable effect of the liquid absorbed by the stomach in restoring the fluidity of the blood; and the presumption that the saline treatment, both as applied to the stomach and by its use in venous injection, may owe its effect as much, probably more, to the fluid itself, than to the ingredients it contains. Fifthly, the great importance of the arterial circulation being restored as gradually as possible, and the fact of convalescence taking place without the consecutive fever, which so often proves fatal in the *fourth* stage—the stage of reäction.

This method of treatment I have used with success in twelve of fourteen cases, and I may say in twelve consecutive cases. The first case in which it was tried and proved successful, occurred about six weeks ago, soon after the first appearance of the disease in this city. In the four first cases of the disease which came under my notice, internal and external stimulants were liberally administered. The mustard emetic and bleeding were also had recourse to, and every patient died in less than twelve, one in six hours. I determined therefore, (having understood from my professional brethren that the saline treatment had equally failed,) to take the first opportunity of watching the disease uninfluenced by remedies, with the hope that I might thus ascertain, if possible, the natural effects of the constitution, if any, to relieve the disease. In the cases already mentioned, I had observed that the stimulants were taken with great reluctance, and in one instance of extreme collapse, when the patient was apparently unconscious of every thing, I was much struck by an earnestly-expressed desire, that no fire should be made in the room, directions to that effect having been given in her hearing. In two of these cases the thirst was, I observed, excessive, and very distressing to the patient.

Soon after this, I was requested by a medical gentleman of this city to visit a female, fifteen years of age, whose father was at that time lying in the house dead of cholera. It was a marked case of collapse, with constant vomiting and purging of a fluid like rice-water. The pulse at that time, about one o'clock P. M. was scarcely perceptible. Calomel and opium had been previously given. I recommended a very liberal dose of opium, with various stimulant antispasmodics and olive-oil, and visited the patient again at seven o'clock that evening. The symptoms at that time were much aggravated—the vomiting and purging not at all relieved—the pulse imperceptible—expression of countenance cadaverous in the extreme. In despair, I recommended ten grains of musk to be given every hour, to the extent of two scruples; and left the patient with the impression, which was also that of the other medical gentleman in attendance who was with me, that she could not survive many hours. Having reflected upon the case, and still feeling anxious that relief, if possible, should be given, I returned in an hour with some green tea, and desired some to be made very strong and given. Whilst this was in preparation I visited the patient, and to relieve the thirst, which was excessive, presented a pint of cold water, the greater part of which was eagerly swallowed, and in less than a minute the whole was apparently rejected by vomiting. At this time I may observe, the symptoms were the same as last described. In two or three minutes after she *asked* for the water, which was drank, and immediately rejected as before. Having witnessed the continual repetition of this process for half an hour, (during which time the tea had been offered, and refused as soon as tasted,) without any increase of collapse, and with the satisfactory circumstance of a change in the voice, which had been highly characteristic of the disease, I left directions that cold water should be given to any extent which the patient might desire. I was informed the next morning that the patient had taken some gallons of water; had been constantly sick after each draught; but had not been sick, or asked for water the last hour. I also ascertained that the window, which opened immediately upon the bed, had not been closed the whole night. At this time there was no perceptible pulse or increase of temperature, but the countenance was, I thought, not quite so cadaverous in expression. The same plan was continued. In the middle of the day there was still no manifest improvement, but in the evening the pulse was perceptible. The next morning the pulse was decidedly improved, and on the following day the patient was convalescent, without any appearance of fever. If I have been tediously minute in the history of this case, I trust that it will be attributed to the great interest I must naturally feel in a case which terminated so satisfactorily, and which was the foundation of my future practice.

Soon after this, I was told by another medical gentleman that he was in despair, having lost seven cases of cholera in succession, and had just visited another, who, he supposed, would be dead before night; and that he had done nothing but ordered small doses of capsicum, with camphor mixture. I found this patient in a similar state to the last—recommended the unrestrained allowance of cold water—heard she was better the next day, and found her convalescent the following day, but with indications of fever. This circumstance, however, was accounted for by the fact of beer and cider, as well as cold water, having, through the prejudice of the attendant, been frequently given.

My experience, subsequent to the cases mentioned, has been confined to the Cholera Hospital in Gloucester, which was opened a fortnight ago, and placed under my superintendance, with the assistance of a resident surgeon. The first four cases sent to the hospital, which was then under my care, were all dead next morning. Since that period, of the forty-eight cases admitted, twenty-one have been discharged cured; eight I consider convalescent; eight are under treatment; and eleven have died. Of the eleven deaths, two might fairly be attributed to previous treatment, or other circumstances; three were in progress towards recovery, and relapsed from improper exertions on the part of the patients; two which were under three years of age, died under symptoms of cerebral congestion, after the pulse had been restored; one was more than sixty years of age, another about fifty, and extremely emaciated from previous disease or starvation; in one, the case was too advanced to admit of the plan being tried; and in another the patient was a notorious drunkard, and died a few hours after admission, with a gin bottle concealed about her person. If due consideration be given to these circumstances, the deaths cannot, I think, throw any discredit on the practice. I may add, that in all the cases great allowance must be made for the effect of previous treatment, as being most commonly directly opposite to my views of the disease. My experience hitherto justifies, in my opinion, the following conclusions, viz:—That in all cases the progress towards death is retarded by the water treatment; that when the irritability of the stomach is excessive or unimpaired, reäction will be established in a very great proportion of the cases; and that when the natural powers of the constitution are not unusually weak from extremes of age or other causes, such reäction will be followed by an early convalescence.—Any suggestion from those who are much more conversant with the disease than myself, will be received with gratitude, and any question answered to the utmost of my ability.—*Edin. Med. and Surg. Journ. October*, 1832.

40. *Cholera without Intestinal Discharges.*—M. GIRARDIN communicated to the Academy of Medicine of France, at their sitting on the 8th of January last, two fatal cases of cholera in which there had been no evacuations from the bowels. In one no post mortem examination was made, but in the other the intestines were found distended with the rice-gruel fluid; and, on tracing the rectum, it was ascertained that, for the extent of three or four inches, the gut was so much contracted, that a goose-quill could not be passed through it. Almost all the members agreed that these could not be regarded as cases of dry cholera, the discharges being prevented by the stricture of the rectum, and *none of them had met with any case of cholera in which the bowels were found empty after death.*

41. *Saline Injections in Cholera.*—"The well-known fact that, in cholera, the serous and saline parts of the blood are rapidly thrown out upon the mucous surface of the bowels, naturally enough suggested the idea of supplying the loss by direct injection of a sero-saline kind into the veins. To throw such a fluid into the stomach or bowels, where it was already in superabundance, and at a time when all powers of absorption are suspended,* appears the wildest and most absurd scheme that ever was invented, as the result has shown. Contrary to expectation, the saline injections were not only borne with apparent safety, but, in almost every instance, produced a speedy, and as it were, a resuscitating effect on the whole system, restoring the pulse, the temperature, and the plumpness of the body. The prospect was too flattering to be realized. Such a gigantic power over disease—it might be said over death, was more than nature would permit, and accordingly we find two important drawbacks on the new remedy. Either the fluids run off by the bowels with more rapidity than ever—or the head or lungs become oppressed, and death takes place in a different manner than by cholera. Of both these events we have seen the most unequivocal and incontestable proofs. While therefore we bear testimony to the astonishing—the almost miraculous physiological effects of the saline injections, we are reluctantly compelled to bear witness to the pathological phenomena which succeed. We are grieved to say that, in our opinion, a remedy is yet to be sought for the collapse of the epidemic cholera. Till this be found, our only resource is vigilant attention to the first stage or diarrhœa, with which the disease almost always commences, when a milder form of the flux does not precede. We are now to notice some communications from practitioners on the subject of saline injections.

"Dr. Lawrie, of Glasgow, whose able work on cholera we have already noticed in this Journal, has stated the results of his observations in the Medical Gazette for June 7th, 1832. Following the directions of Dr. Latta, he injected from 70 to 150 ozs. within a few hours—and all his patients died, viz. six in number. In all of these temporary benefit was produced; 'but in several the fatal result seemed accelerated.' In one case he then tried the addition of albumen to the saline injection—in another the serum of bullock's blood—in a third, human serum—in a fourth, human blood—in two cases, small quantities of whiskey—in two, a few drops of laudanum—still *all* died. Dr. L. then began to suspect that the quantities injected were too large, and they were limited to 30 ounces at a time, thrown in very slowly, and carefully watching the effects. Under these precautions, four have recovered; 'but so many have died in despite of all precautions, so evidently injured by the practice, that I have now almost entirely laid it aside, as not only useless, but frequently hazardous.' Dr. L. injected 26 cases, 22 of which died! Dr. L. witnessed the phenomenon to which we have alluded—the drain of fluids from the bowels as fast as the injections were thrown into the veins. One patient made this remark—'as fast as you put water in my veins, it runs out by my stomach.'"—*Med. Chirur. Rev. Oct.* 1833.

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* This belief, which is pretty generally entertained, that the powers of absorption are entirely suspended in cholera, appears to us to be unsupported by any well-established fact.—*Ed.*

42. *Influence of Putrid Exhalations upon Cholera.*—M. DOUBLE has made a report to the Royal Academy of Medicine on this interesting subject. When the cholera appeared at Blois, a physician of that town saw with fear that the workmen had unpaved the streets for the purpose of cleansing them; he feared that the removed earth might give rise to fatal or choleric exhalations, an observation which he thought had already been made at Paris. In consequence of which he wrote to the prefect, and the latter transmitted his letters to the minister, who sent them to the Academy to decide the question. Numerous researches were necessary to arrive at this solution: M. Double devoted himself with the greatest care to this subject; he described all the work of this kind which had been done in Paris since the origin and during the existence of the cholera; he has followed them from street to street in the different sections of the city; he has given all their dimensions; he has pointed out the nature of the several strata of earth which have been dug out, and after the removal of the earth, he has shown that the inhabitants of the streets where the excavations were made, as well as the workmen employed, have been without comparison more healthy than all the others. He supports this remark, both by the recent experience of M. Parent-Duchatelet, and by the observation made at Montfaucon, where persons are occupied in the most unhealthy work, and where notwithstanding very few of the workmen are effected. From these facts M. Double concludes that the exhalations which escape from animal matters are not near so dangerous as have heretofore been supposed, and that, even during an epidemic, the removal of earth which increases these exhalations can be made without danger; but that this however, should not restrain the administration, when peculiar circumstances should force it to defer enterprises of this nature. After an animated discussion, the Academy decided that the conclusion of this report should not be expressed in terms decidedly affirmative. However, the final drawing up of the report was entrusted to M. Double, and the report and his conclusions were put to the vote and were adopted.—*Archives Générales, September,* 1832.

CHEMISTRY.

43. *Aricine, Quinine, Cinchonine.*—Aricine was obtained by Pelletier and Coriol from a variety of Peruvian bark. Pelletier infers from a comparison of his analysis of aricine, with the analysis of quinine and cinchonine by Liebig, that the three may be represented by three grades of oxidation of a peculiar

base, composed of 20 carbon, 24 hydrogen, and 2 nitrogen. Cinchonine consisting of this base with 1 atom of oxygen, quinine of the same base, with 2 atoms of oxygen, and aricine containing 3 atoms of oxygen.—*Ann. de Chim. et Phys. Oct.* 1832.

44. *Chemical Analysis of Ergot.*—In 103 parts of Ergot, Mr. Wiggers, of Berlin, has found—

White oily matter	35.0006
Solid fatty matter, crystallizable, and of peculiar nature	1.0456
Cerine	0.7578
Fungous matter	46.0862
Ergotine	1.2466
Vegetable ozmazome	7.7645
Sugar	1.5530
Gummy extract, with red colouring principle	2.3250
Vegetable albumen	1.4800
Acid phosphate of potash	4.4221
Phosphate of lime, and traces of iron	0.2822
Silica	0.1394
	102.0930

There are some remarkable points in the preceding analysis. In the first place, the presence of vegetable ozmazome identifies the ergot with the class of mushrooms in which this substance forms a considerable proportion. In this ozmazome seems to reside the power which promotes parturition. The ergotine is insoluble in water, and seems, from the experiments of M. Wiggers, to be the principle in which the poisonous qualities of the ergot reside. On several animals it has operated as a powerful irritant poison, while the ozmazome produced no such effect.—*Lancet, from Alleg. Med. Zeit.* 10 *Nov.* 1832.

45. *Phosphuretted Hydrogen.*—Rose proves that the gas obtained by heating hypo-phosphorous, or phosphorous acid, and the hypo-phosphates, and which is spontaneously inflammable in the air, is a *base*. It ranks them with ammonia, as being a *basic* compound of hydrogen with a simple substance.—*Ann. de Chim. et Phys. Sept.* 1832.

46. *On certain Phenomena produced by Capillary Action.*—This is the title of an interesting paper by Dr. S. Magnus, published some years since in *Poggendorf's Annals*, and now translated for the *Annales de Chim.* &c. It contains a number of experiments on endosmose and exosmose of gases and of liquids, which in the author's view, result from capillary action. The first is an examination of the unequal penetration of gases through cracks in glass receivers, first noticed by Döbereiner. The results obtained are explained on Dalton's hypothesis, that one gas is a vacuum to another: an explanation inadmissible since the proof of the great *power* with which the permeation is effected, which is given by Dr. Mitchell's* experiments.

The corresponding phenomena of liquids begins with the infiltration of nitrate of copper into a tube, closed at the bottom by a bladder, containing pure water, and plunged into a solution of the metallic salt. This observation was made by Fischer,† of Breslau. In the course of the article an interesting experiment of Parrott is given, in which when a glass bottle was filled with alcohol, and the mouth closed by a bladder, and the whole surrounded by water, the water filtered into the bottle so as to inflate the bladder. Dr. Magnus concludes, that all these experiments can be explained by capillary action, if different liquids are supposed to have different attractions for each other, and have different powers of passing through capillary openings.—*Ibid. Oct.* 1832.

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* Am. Journ. Med. Sc. Vol. VII.

† Gilbert's Annals, Vol. 72.

AMERICAN INTELLIGENCE.

A Case of Compound Camerated Fracture of the Cranium, successfully Treated by the Removal of three pieces of the External Table of the Bone. By Paul F. Eve, M. D. Professor of Surgery in the Georgia Medical College.—Opportunities for extensive observations on traumatic surgery being very limited in the United States, it would seem desirable that all interesting cases should be faithfully recorded, not for the mere gratification of rendering us somewhat independent of foreign sources for practical information, but for the more important advantage of testing in our climate and country, the principles laid down by European writers, and thus tending to establish medicine on a broader and surer foundation.

In the changes which surgical operations have been undergoing at the metropolis of the medical sciences, where, if a Broussais has introduced new ideas in medicine, a Lisfranc has not done less in simplifying surgery, injuries of the head have received a due proportion of attention; and it may now be considered a pretty well settled point, that the trephine is required in comparatively few cases. In the one which we propose relating, the relief afforded by nature in removing the symptoms of pressure arising from depression of the internal table of the cranium, is exhibited in a striking manner, and may be useful in preventing a too hasty and rash resort to instruments in similar accidents.

Saturday the 8th of June, near 8 o'clock, P. M. I saw, at the request of Dr. A. Cunningham, Professor of Theory and Practice of Medicine in our school, a black boy, of very athletic form and industrious habit, aged twenty years. He had received, about an hour before, a blow on the head from half of a common brick thrown by another boy at the distance of a few yards. When struck, he fell on the face, which was severely bruised, particularly the nose and forehead. The wound extended from near the coronal suture backwards, through the *left* parietal bone to about its middle. The scalp was lacerated to the bone, which was fractured and depressed to the depth of three-fourths of an inch. There was some loss of blood; total absence of intellect; severe convulsions at intervals, confined mostly to the muscles of the *right* side; face drawn to right shoulder; mouth contorted; pupils appeared natural, but not minutely examined; respiration stertorous; no vomiting, and nothing remarkable in the pulse.

The patient was placed on a matrass laid over a table, and with the assistance of Dr. C. and Dr. L. A. Dugas, Professor of Anatomy, the wound was extended, and a crucial incision made down to the bone. Two or three arteries required to be secured, and not having with us the forceps for torsion, the ligature was applied. The angles being dissected up, with Hey's saw, three portions of the external table of the cranium were elevated and removed. Some blood flowed from the deploic structure of the bone, and the patient now seemed to improve in breathing, and the convulsions ceased. From restlessness and severe convulsive movements, two or three of which excited alarm for the patient's safety, the operation was protracted nearly two hours; though sensible to pain, he remained perfectly unconscious during that time. The symptoms of compression gradually subsided; the patient opened his eyes when loudly called by name, and although the inner table of the cranium was plainly seen depressed to one-half or three-quarters of an inch at the bottom of the wound, its edges were simply brought together, and we separated at 11 o'clock to meet early in the morning.

Of the pieces of bone extracted, one was an inch and a half in length, by a quarter to one in breadth, the other two were smaller, and were from the corresponding opposite side of the centre of depression.

Sunday the 9th, at 5 o'clock. Our patient had been quiet until four, when he awoke without recollecting any thing that had occurred since the accident; he was now rational, and even got up unassisted and urinated. He complained of the bruises on his face, of a stiff neck, and soreness over the whole body; felt the right arm, &c. benumbed; difficulty in speaking, tongue being swollen, slightly lacerated by the teeth, flattened and drawn to right side when moved; respiration good, and pulse so natural as to be counted only once during the whole treatment. The wound was dressed with sutures and adhesive plaster, and the weather being mild and pleasant, it was not disturbed for fifty-seven hours. Under daily dressings of adhesive strips and lint wetted with a solution of the chloride of soda, it rapidly improved. The upper angles of the incisions united by the first intention, the other two suppurated a little, but the twenty-third day after the injury, there remained only an opening about the size of a duck-shot at the centre of the crucial incision, from which there is still discharged about a tea-spoonful of matter in the twenty-four hours. The hair has nearly covered the cicatrices, and pressure does not excite pain. The tongue and hand progressively improved. In less than fifteen days from the operation, he carved for a public table at one of our hotels, and yesterday his employer said he was as well and active as ever he was.

As the symptoms of compression of the brain in this case appeared to be increasing before the operation, and as they gradually subsided with the flow of blood which followed the removal of the external and a small fragment of the internal table, we believe the pressure was produced by an accumulation of this fluid.

It may be, that exfoliations will still take place, or the patient be subject to attacks of epilepsy, but we do not believe that the probability of these occurrences would have authorized us in proceeding to remove the internal table of the cranium, when the urgent symptoms were relieved by the operation already described. And even should any untoward accident arise from the injury the brain has sustained, the trephine can still be employed with reasonable hopes of success.

Augusta, Georgia, July 1st, 1833.

On the Use of Ice and Chloride of Soda in Cynanche Maligna. By Samuel Jackson, M. D. of Northumberland, Pennsylvania. [Communicated in a letter to the Editor.]—In the last number of your Journal, p. 261, you have published an extract of my letter concerning the use of ice in cynanche maligna. This letter was written in April, 1832, and since that time I have had ample opportunities of testing this remedy. In more than forty cases I have found it highly useful, and without it I am certain more than one-half would have been lost. Drs. Magill of Danville, Baskins of Selinsgrove, and Lotz of New Berlin, have all used it with the happiest effect. So necessary has it become at the last named place, that Mr. Laschelles, a benevolent gentleman of that town, has refused to let his ice be used even in his own family, thinking proper to reserve it all for the sick.

The patient ought to hold it almost constantly in the mouth, as directed in my former letter, and swallow the solution; but if he be not old enough to rest on his guard against swallowing the undissolved lump, it may be enclosed in a gauze bag. If the fever be high, he may swallow small portions of it finely powdered.

If the child be too young to manage ice, we inject the coldest solution of it into the throat very frequently; and in these cases pounded ice may be swallowed if there is much fever.

I have often thought of using it externally, but somehow the only favourable opportunities of trying this method have been suffered to escape unimproved.—"Occasio celeris, experimentum lubricum, judicium difficile," says the reputed father of physic, and as the disease has passed over us, I refer the experiment to others.

If you or your friends should try the ice, let me assure you that much will depend on the incessant use of it night and day, till the inflammation has evidently yielded. Till this time the patient can take very little rest, unless it be a mild case that may not require this uninterrupted repression and sedation. But in bad cases we must not suffer the disease to gain upon us during the night what it has lost under the use of ice the preceding day.

Every case of cynanche tonsillaris, or simple inflammatory sore throat which has fallen under our care for the last twelve months, has been treated with ice after bleeding, and with great advantage. And in one case of most severe aphthous sore throat, which attended a low bilious fever, that of Dr. Robbins, of Sunbury, he assured me it was the pleasantest thing he had ever experienced, and I may fairly add—the most useful. But even the comfort which this remedy brings, is not to pass unnoticed. Mr. Greenough's daughter, eight years old, was delirious in the cynanche maligna for many days, and the ice could not be used. During all this time, four days and nights, she swallowed not one tea-spoonful of any thing whatever, but was incessantly employed during all this time, unless when she might dose for a few minutes, in washing out her mouth with ice water, and to this must be attributed her safety.

Chloride of soda is another most noble remedy in this wayward disease. We have begun the use of it as soon as the cineritious specks appear, if at the same time there be general prostration; but if the gangrenous process is slow, and there is abundant vivacity in the system, it may be omitted altogether, and the ice continued. The sloughs will gradually and surprisingly disappear as the general inflammation of the fauces abates.

When the gangrene is considerable, and the inflammation is at the same time diffused, we use the ice and chloride alternately. But when the system is sinking, and we have reason to suppose that collapse is at hand, the ice must be omitted and the chloride used very strong.

With respect to the strength of our medicine, we are at some loss. Such as we have received from Philadelphia, we have used with from one part water to ten, according to the age of the patient and the state of the disease; but we are by no means satisfied with our experience on this subject.

In order to purify the stomach, we have given in the advanced stage of the disease, large doses of calcined charcoal, such as a drachm three or four times a day to a child ten years old.

We have bled freely in some cases, given calomel purges, poured abundance of cold water on the head when there was delirium, and sometimes have put the feet into warm water, while cold was applied to the head. We believe that many who are lost in this disease, perish of inflammation of the brain; hence we suppose that cups to the back of the neck would prove highly beneficial. Leeches to the throat, we are aware, have been used, but they cannot be generally attended to in the country. All these remedies are in trial among my medical friends, and when they shall have made their report, I will give you a more full account of our methods and their success, for the use of your Journal. Meanwhile, I hope that you will try these medicines, if an opportunity should offer, for I can assure you, that I have not lost one single patient of all whom I have myself exclusively attended. I began the ice with my first patient, my own child, and I have used it in nearly all the rest. A robust boy, four years old, son of William Zeclif, died, to the surprise of his friends, and without medical aid; I was soon called to the rest of the family, four miles in the country, where I found the mother, her sister, and three children, the youngest six months old, all very ill of the disease. Here was certainly a mortal disease, as it had already destroyed one of the family, but all the others recovered under the use of ice and chloride of soda. Mrs. Schuyler, of this town, lost one of her children of the disease at Pennsborough, twenty-seven miles above us. Here neither ice nor the chloride was used; but when the mother returned to

Northumberland, her other three children were severely attacked with the disease, and they all recovered under the use of ice, without any other application to the throat. Daniel Gossler, of this town, lost two children in whose cases neither ice nor the chloride was used, though under the care of a skilful physician, and great numbers died in the country above us, while the new remedies were yet unknown.

Case of Dislocation and Extraction of the Astragalus. By WILLIAM A. GILLESPIE, M. D. of Ellisville, Virginia.—On the evening of 23d March last, I was called to a Mrs. A——, a corpulent lady, aged about fifty, who had fallen from a horse, and dislocated both ankle joints. The luxation of the right foot was accompanied by that of the astragalus, which projected through a wound of the integuments of the external ankle. This wound extended from the instep to the tendo-Achillis, nearly as straight and smooth as if it had been inflicted by the knife. The severity of the injury induced me to seek consultation immediately, which I readily obtained in the persons of Drs. Fox, Goodwin, and Poindexter, to which gentlemen I am under obligations for their assistance and counsel. Our united opinion was to attempt to save the limb by removing the astragalus, and combating such symptoms as should arise. This bone was already partly without the joint, and confined to it, by only a few fibres of ligament, its connexions generally being ruptured, and its trochlea occupying about an angle of forty-five degrees from its natural position, consequently could only have remained as foreign matter, within the joint, without a possibility of regaining any permanent connexion with it. The wound of the integuments was sufficiently large to admit of its removal, without much pain or difficulty, by passing a bistoury in such direction as to separate its little remaining connexions. This operation was performed early on the next day. The integuments were now approximated, three stitches adhesive strips and light dressings applied. I must here observe that the pain at the time of the occurrence of the accident, and for several days afterwards, was so excruciating as to require the liberal administration of laudanum. On the third day she complained of stiffness of the lower jaw, and difficulty of deglutition, which induced me to fear the occurrence of tetanus. Laudanum was now more freely administered, and these symptoms yielded within twenty-four hours. Nothing remarkable took place now, until 1st April, when a decided disposition to gangrene supervened. The fermenting poultice prepared of bran, coarse flour, molasses, yeast, and water, was now applied, and kept sufficiently warm to ferment, by hot bricks placed on each side of the foot. In twenty-four hours there was most decided and great improvement in the appearance of the wound; the swelling, mostly, disappeared, together with the livid colour and dark spots previously on the lower part of the leg; the cuticle separated, and an abscess formed on the inner ankle which discharged a large quantity of pus. Poultices were continued for several days mixed with a decoction of red-oak bark. On the 3d April, hectic fever came on, attended by exhausting night sweats. Bark, wine, and diluted sulphuric acid, were now prescribed, the hectic soon began to yield, and by the 14th April had entirely disappeared. I must not here omit to mention that the leg piece of Professor N. R. Smith's apparatus for fractures of the os femoris, which is described in his "Medical and Surgical Memoirs," was early applied, and the leg suspended, which added evidently much to her comfort, and I am clearly of opinion accelerated the cure.

On the 19th April she had an attack of bilious pneumonia, which yielded to the ordinary remedies; but notwithstanding this the wound healed rapidly and progressively from about the 10th April to the 23d May, when it was entirely healed; the cure thus occupying only two months, a much shorter time than I had anticipated, and less I believe, than that of any case on record. She cannot yet walk, but I feel confident she will be able to do so after a reasonable time. Owing to the severity of the injury, and the excessive pain from the least motion of the injured parts, and her great weight, she was at first directed to remain in the most easy posture, which was on her back, and not to be moved; consequently she passed her urine and fæces in bed, which from the difficulty of keeping the parts clean, produced considerable excoriation. I therefore constructed an apparatus, (which I have not space to describe,) for raising her gently from the bed, so that a vessel could be placed under her to receive the urine and fæces. Her situation was rendered as agreeable, perhaps, as the nature of the case would admit, which is a great point, in my estimation, in the treatment of both medical and surgical diseases. Nothing that can render the patients' confinement more comfortable, whether in mind or body, should ever be denied, unless it is of a very injurious tendency in some respects.

The above is a statement of facts, from which, I think, some hints may be taken, or rather the testimony of the success of others strengthened. There are, I believe, but few cases on record, similar to the present one, but enough to demonstrate the propriety of removing the astragalus in preference to amputation, which was formerly the established practice in such cases. It is no small matter to save a limb, which seemed almost to demand amputation. Whilst modern surgery has achieved many feats of almost incredible success in the use of the knife, I feel confident that this science in its present rapid march of improvement, aided by experience, will clearly reveal the practicability of saving many useful limbs, which are now sacrificed, some of them, perhaps, at the shrine of ambition, thirsting for ill-earned fame by numbering heaps of amputated limbs!! The excellent effects of the fermenting poultice in this case, is worthy of recollection. It was prepared in such a way as to be *truly a fermenting poultice*, and its action appeared to be strongly antiseptic, whilst it destroyed the intolerable stench of the discharges. Another remark with respect to the use of laudanum when we have any apprehension of tetanus. I am of opinion that after all severe accidents or operations attended by much sensibility and pain, it is most proper to begin its administration early, and to keep the system under its sedative influence by sufficient and repeated doses. I have but little doubt, but for the administration of this potent drug, I should have had to contend with that very formidable disease.

On the Efficacy of the Cold Dash in Nervous and Convulsive Diseases. By Charles A. Lee, M. D. of New York.—In the last number of the American Journal of the Medical Sciences, there is mention made of the efficacy of the cold dash in convulsions of infants, particularly in cases of hydrocephalus. It is perhaps not generally known, that pouring cold water in a continued stream upon the head, is one of the most effectual remedies in most cases of nervous and convulsive diseases. In hysteria, epilepsy, chorea, delirium tremens, and catalepsy, I have employed this remedy with the most decided success, as well as in convulsions of children from teething. The following case of catalepsy I relate, not only because the disease is one of rare occurrence, but to illustrate the effects of cold, when applied in the manner above-mentioned.

In January, 1831, I was called to visit a coloured girl, aged fourteen, large for her age, and who had previously enjoyed good health, with the exception of slight pains in the right hypochondrium, extending to the spine, occasioned as was believed by a burn in that region, which occurred when she was a child. Latterly she had suffered much inconvenience from it, and the day when I first saw her, she had complained more than usual. I found her in the following situation. She lay on the floor on her back, in a perfectly insensible state, incapable of moving, or of being roused by pinching, calling aloud, shaking, or even by running pins into her flesh. She lay in the exact position in which she fell, and had not been seen to move in the slightest degree. The pulse was 100, of natural force, eyes closed, respiration easy, and the skin of usual temperature. I raised her arm to an angle of forty-five degrees with the body; it remained in that situation. I bent the forearm on the arm; it staid bent. The same occurred to her other limbs. They were easily flexed, but it required considerable force to straighten them again. The eyes were closed, and the eyelids when raised shut in a short time. How long her limbs would have remained in the position in which they were placed I know not, but they continued thus while I was in the house, which was perhaps an hour. I noticed occasionally slight spasms in the muscles, but not sufficient to cause motion. She lay in this state fourteen hours, and then came out of it perfectly unconscious of any thing that had transpired. In about a fortnight afterwards she had another similar attack, from which she recovered in six hours. In three or four weeks from this time, she had a different attack, being violently convulsed, so that it required several persons to hold her, and prevent her injuring herself. Incurvation and recurvation of the body would alternately ensue with surprising rapidity. She foamed at the mouth, seemed unconscious of what she was doing, and sensation and voluntary motion were suspended. She had six or seven of these paroxysms, which lasted about twenty minutes each time, in the intervals lying as in the former fits. On pressure over the dorsal vertebræ she started as if it gave her pain, and moved her legs as long as the pressure was continued. She lay in this state twenty-four hours. I now directed cupping over the tender portion of the spine, and made an issue with concentrated nitric acid; this was kept discharging for several weeks, during which time she had no attack. In about a week after it healed she was again seized with a similar fit to the last, and lay *five days* perfectly insensible, without swallowing any thing. When she awaked she was but little inclined to eat, and as she had had no evacuation, digestion appears to have been in a measure suspended. The measures employed to shorten the duration of the fit, appeared to have but little effect except venesection, which evidently was beneficial in several instances.

About seven months since she became pregnant, and has had three returns of the disease in that time, from which she has immediately recovered by pouring cold water in a continued stream from a considerable height upon her head. In no instance has it been longer than five minutes before she was perfectly restored. I have no doubt, were it employed at the proper period, it would prevent an attack; but as there is generally no warning, or *premonitory symptom*, this is impossible.

New York, May 18*th*, 1833.

Case of Urinary Calculus successfully treated by Lithotrity. By P. S. Spencer, M. D., of Petersburg, Virginia.—Mr. Peter Bass, a young man of twenty-seven years of age, was attacked during the year 1827, with symptoms of stone in the bladder, which gradually increased in violence until they became nearly insupportable: great muscular debility, accompanied with loss of general health, was the result of the excruciating pains, and consequent watchfulness attendant on this disease. Exercise on foot or horseback was precluded by the aggravation of all the symptoms; and in truth the slightest motion produced the most severe pains. On his arrival at Petersburg, such was the irritable condition of his body, that it was expedient to prepare his system by an antiphlogistic course of saline purgatives, &c. before we considered it prudent to make an examination with the sound. On the introduction of that instrument, May 19th, 1832, the calculus was easily discovered; and on the following day, in the presence of Drs. White and Friend, I proceeded to perform lithotrity. I was enabled to seize the calculus without any difficulty, pain or inconvenience, and after perforating it in three different directions, I succeeded in crushing it into innumerable atoms, which readily passed off with the urine in the course of three days, without any irritation. The operation was completed in about twenty minutes. The fragments and powder of the calculus which were preserved after being discharged with the urine, when weighed amounted to sixty-five grains. He experienced very little pain during the operation, and would not have been confined to his bed more than a few hours, had not his own imprudence induced an attack of scarlet fever, which was at that time epidemic in this town. The weather was excessively cold for the season, and he was exposed to the night air by sleeping with the windows raised; which cause, combined with the state of the atmosphere, and the excitable condition of his system, produced an attack of that disease. He was soon relieved by the ordinary treatment which consisted of the use of calomel, cathartics, and salts, and sulphate of quinine during the remission of fever, and the application of leeches to the temples when there was too great a determination of blood to the head. The red-pepper gargle with salt and vinegar was employed with advantage.

The operation has proven entirely successful in this instance. More than ten months has elapsed, and the patient continues to enjoy the best health. This hasty sketch is given to bring the operation into more general use in this country, as we deem it at once safe and successful in a large majority of cases. I contend that we want only experience in this important operation, to make it as successful in the United States as it is in France. We do not consider it any disparagement to the instruments, because they were thrown aside both in Philadelphia, and in some of the principal towns of the north of Europe. It is sufficient for us that we have seen it performed repeatedly in Paris, with complete success, by M. Leroy, M. Civiale, and M. Heurteloup.

On the Use of Calomel in Pruritus. By Philip Younge, M. D. of Thomaston, Upton County, Georgia.—For the suggestion by Dr. Dewees of the use of a solution of borax in cases of pruritus, the profession must ever be thankful. Certainly few disorders which beset the pregnant state are more difficult to manage than pruritus. We have found the solution of borax a most efficient remedy when there was an aphthous efflorescence about the vagina. It has been my misfortune to treat cases of pruritus of the most uncompromising obstinacy. Every reasonable plan I had ever heard of, was followed to its utmost extent. A rigid antiphlogistic plan of diet, the borax, the hartshorn, cold water, mercurial ointment, bleeding and purging as far as consistent with pregnancy, were all tried without more than slightly palliating the affection, until I resorted to the local application of calomel. I had it sprinkled over every spot of inflammation within the vulva, as thoroughly as the nature of things would allow, three or four times a day. Whenever the itching became urgent, my advice was to wash the part by means of a syringe, with cold water, and reäpply the dry calomel, which immediately calms the most insufferable irritation.

I have pursued this plan when the disease seemed perfectly unmanageable, with the happiest effects; although the disposition to recur was manifested until delivery, this remedy always appeased the distress.

Extraction of a Metallic Spark from the Anterior Chamber of the Eye. By T. D. Mutter, M. D.—The patient, S. Thomas, a stone-cutter by trade, whilst employed in his vocation, was struck in the left eye by a spark given off from the steel instrument with which he worked. The spark entered the cornea, nearly at its centre, and passing entirely through it, lodged in the anterior chamber of the eye, where it could be distinctly seen, occupying a position in the inferior part of this cavity. When I saw the patient, fifteen hours after the occurrence of the accident, a good deal of inflammation had already taken place. An injected conjunctiva, a continual epiphora, and a sensation of smarting or burning referred to the entire ball of the eye, were the accompanying symptoms. The opening in the cornea about half a line in length seemed to be valvular, the spark having penetrated from below upwards, and its edges were smooth and regular, as if made with the point of a lancet. In consequence of the opening being valvular, but a small portion of the aqueous humour had escaped.

It appeared to me important, that an immediate extraction of the foreign substance should be accomplished, and the operation which seemed most simple, and at the same time best calculated to effect this purpose, was the section of the cornea, which I accordingly determined to perform. The patient was placed in the position recommended in the operation for extraction of cataract, a strong light thrown upon the eye, and a flap composed of the cornea raised up with the lancet-shaped knife of Ware. A portion of metallic matter about the size of a mustard-seed flattened, was then readily extracted with the forceps. The flaps of the cornea was then adjusted, the lids closed, and a bandage lightly applied over the eye. As there existed a considerable degree of inflammation already, and to guard against a future aggravation of it, a blister behind the left ear, leeches to the temples, low diet, and a pretty active dose of the sulph. magnesia were prescribed. The patient recovered in a short time. It is an every day occurrence, among stone-cutters, for these small particles of steel to be driven into the sclerotica or cornea, where they produce more or less inflammation, if not immediately removed; but it is not so usual for them to penetrate entirely through the cornea, and lodge in the anterior chamber.

Dr. Hosack's *Memoir on Staphyloraphy.*—The principal point of interest in this memoir, is the account of a case in which Dr. Hosack has successfully performed the operation of staphyloraphy; and the description of a new instrument for passing the needle with ligatures, which last process constitutes the principal difficulty in the process.

Staphyloraphy was, we believe, first performed in this country by Professor Warren, of Boston, who has also devised an instrument for passing the ligatures. See Vol. III. p. 1, of this Journal.

Dr. Hayward's *Lecture on some of the Diseases of a Literary Life.*—This was delivered before the American Institute, Boston, in August last, and is a highly interesting lecture on a very interesting subject. We wish that the author, who is so competent to enlighten his profession and benefit the public, would make more frequent use of his pen.

Plate of the Fœtal Circulation, with References, by W. E. Horner, M. D. Professor of Anatomy.—This plate is engraved by Mr. Drayton, of whose skill in his art, this Journal furnishes numerous examples. As to its accuracy, it is sufficient to say, that it is a copy of the plate exhibiting the fœtal circulation in the magnificent work of Tiedemann; and that the references have been made by Professor Horner. Students have often great difficulty in understanding the fœtal circulation; a glance at this plate will at once make it manifest. The price of the plate is exceedingly moderate, and every student should possess himself of one.

Manec's *Plate of the Cerebro-spinal Axis.*—Messrs. Carey & Hart have purchased the remainder of the edition of this interesting plate, and have reduced the price to $2 50.

Study of Anatomy Legalized in Connecticut.—The General Assembly of the state of Connecticut has passed an Act similar to that enacted in Massachusetts, for legalizing the study of anatomy.

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QUARTERLY
MEDICAL ADVERTISER.

IN consequence of the extended circulation of the American Journal of the Medical Sciences, the Proprietors intend, in compliance with the wishes of many of their Friends, to affix to each No. a Sheet of Advertisements. All Booksellers, Medical Gentlemen, and others desirous of taking advantage of this mode of announcement, will please address their Advertisements to Carey, Lea & Blanchard, Philadelphia, by the 10th day of the month preceding that of the publication of the Journal, viz. on 10th July, 10th October, 10th January, and 10th April.

TERMS.

For one page - - - - - - - -	Six dollars.
Half a page or less - - - - - - -	Three dollars.

Philadelphia, January 20, 1830.

HARVARD UNIVERSITY.
MEDICAL LECTURES.

The Medical Lectures in Harvard University will begin in the Massachusetts Medical College, Mason Street, Boston, the third Wednesday in October next, at a quarter before nine, A. M., and continue four months.

Dr. WARREN, *Anatomy and Surgery.*
Dr. WEBSTER, *Chemistry.*
Dr. BIGELOW, *Materia Medica.*
Dr. CHANNING, *Midwifery and Medical Jurisprudence.*
Drs. JACKSON and WARE, *Theory and Practice of Physic.*

WALTER CHANNING, *Dean.*

UNIVERSITY OF MARYLAND.

The Lectures in the Medical Department of this Institution will commence on the last Monday of October, and continue until the first of March.

NATHANIEL POTTER, M. D. *Pathology, and the Practice of Medicine.*
RICHARD WILLMOT HALL, M. D. *Obstetrics, and the Diseases of Women and Children.*
NATHAN R. SMITH, M. D. *Surgery.*
JULIUS T. DUCATEL, M. D. *Chemistry and Pharmacy.*
E. GEDDINGS, M. D. *Anatomy and Physiology.*
ROBLEY DUNGLISON, M. D. *Materia Medica, Therapeutics, Hygiene, and Medical Jurisprudence.*

Clinical Lectures will be given at the Baltimore Infirmary, by the Professors of the Practice of Medicine and Surgery.

Candidates for the degree of Doctor of Medicine, are required to attend two full courses of the Lectures of each Professor in this Institution, or having previously attended one full course in some other respectable School, where the same branches are taught, a second in this. Those students, however, who have already attended one course in the University of Maryland, will be entitled to the privilege of graduation under the former regulations.

E. GEDDINGS, M. D. ***Dean.***

Baltimore, July 1833.

WASHINGTON MEDICAL COLLEGE,

BALTIMORE.

This Institution, after a prosperous career of six years duration, will commence the session for 1833–4 under new and more flattering auspices; the legislature at its last session having granted an act of incorporation, which empowers the Faculty, in conjunction with a Board of Visiters, to confer Degrees in Medicine under the authority of the state; thus placing it on an equality with the most highly favoured and successful colleges in this or any other country.

The Faculty are resolved by renewed and more strenuous efforts, for the advancement of the rising medical science of our common country, to prove themselves not undeserving of this honourable mark of approbation, of their hitherto unaided exertions; and intend by continuing to improve their courses of lectures, on the plan first fully carried out into practical operation by themselves, to make their entire course more complete than is common in similar institutions.

The introduction of a regular and sustained system of examination, or recitation as it may properly be termed, is a new feature in medical education. Partial and interrupted examinations, with irregular and uncertain intervals, have been practised; but to regard them as a primary and essential part of a series of medical lectures, is a novelty which has been found alike pleasing and instructive, not only to the students of this institution, but more especially to those of other colleges who have honoured it with their attendance. The amount of information communicated is acknowledged by all to be vastly greater. Instead of being merely a constant listener, with the privilege of inattention or forgetfulness, the student is required, at regular periods, to give recitations of the preceding lectures; and the prospect of these, excites him to diligent attention, and intense efforts to remember the facts and doctrines to which his mind has been directed. No plan can be better calculated to discipline the intellect and develope its latent powers.

Anatomy in its various departments of special, general, surgical and pathological anatomy, is universally regarded as the foundation, the "FONS ET ORIGO," of a good medical education. In no other city of the United States, are so great facilities afforded for the study of this important branch, as in Baltimore; owing to the abundant supply of *materials*. Our students are permitted to examine repeatedly all the important organs and tissues, and enabled to fix indelibly in their minds, the relative connection of parts associated in healthful or morbid action, or having a dangerous proximity, when exposed to accidental injuries, or the instruments of the surgeon. They do not merely obtain a single glance at the complex organization of the human body, but they become so familiar with it, by frequent handling, that it is fixed in their minds, like the rudiments of their earliest education; and it is not until this point is attained, that the invaluable facts of anatomy, can be regarded as securely stored up for enduring recollection and useful application. So well is our superiority in relation to practical anatomy, understood and acknowledged, that graduates of other colleges, who had never dissected more than the *fourth part of one subject*, and simply because they could not be procured, have visited us for the purpose of completing that part of their medical education; and our sister institutions, of the more distant sections of the United States, as well as those in our immediate vicinity, *endeavour* to supply their wants out of our abundance. The arrangements of Washington Medical College, for the cultivation of practical anatomy, are no where surpassed.

The chemical chair is amply provided with all necessary apparatus, in order to illustrate the principles of that interesting and useful science; and the professors, one and all, pledge themselves, to spare no pains, to render their respective courses of instruction of the highest value to the student; and to be instrumental in making the graduates of this institution, ornaments of their profession, and a blessing to society.

The annual course of lectures, will commence on the last Monday of October next, and be continued to the end of February, 1834.

Each Ticket	$15
Matriculating Ticket	5
Dissecting Ticket	10
Graduating Fee	10

The student is required to attend two winters, and take all the tickets twice, before he can become a candidate for a degree; but a course in any other respectable college, will be considered as equivalent to one in this.

H. G. JAMESON, M. D., *Professor of Surgery.*
S. K. JENNINGS, M. D., *Professor of Materia Medica.*
W. W. HANDY, M. D., *Professor of Obstetrics.*
S. ANNAN, M. D., *Professor of Anatomy and Physiology.*
J. B. ROGERS, M. D., *Professor of Chemistry.*
T. E. BOND, M. D., *Professor of Theory and Practice of Medicine.*
By order, J. B. ROGERS, *Dean of Faculty.*

March 20th, 1833.

PHILADELPHIA ANATOMICAL ROOMS,

Adjoining the University Yard.

LECTURES ON ANATOMY AND OPERATIVE SURGERY.

THE FALL COURSE

Consisting of lectures of anatomy and class dissections, will commence in these rooms on the 1st of October, and continue throughout the month.

A new, spacious and well ventilated dissecting room has been constructed by the Subscriber, furnished with every thing necessary for the study of practical anatomy, and which will be kept open daily for the use of the class.

THE WINTER COURSE

Will begin in the early part of November, and terminate with the session of the University at the end of February. A complete course of lectures on anatomy will be given during this term, and the dissecting classes superintended personally every evening by the Subscriber.

THE SPRING COURSE

Consisting of class dissections, and surgical operations, of which all the important ones will be described, and exhibited to the class, will be completed during the month of March.

J. PANCOAST, M. D., No. 103, Walnut Street.

July 15th, 1833.

LECTURES

ON

ANATOMY, PHYSIOLOGY,

AND

OPERATIVE SURGERY,

Baltimore,

By A. L. WARNER, M. D.

The subscriber will resume his course on Anatomy, Physiology, and Operative Surgery, on Monday, November 5th: to continue four months.

Lectures on General, Special, and Pathological Anatomy and Physiology, daily; with the privilege of the dissecting room, $ 10.

Lectures on Surgical Anatomy and Operative Surgery, twice a week, $ 5.

The utility of a thorough knowledge of the human structure to the medical student is too generally admitted to require comment, and this city affords more ample and extensive facilities for its culture than any other in our country.

Private pupils will be received at the rate of $ 80 per annum, or $ 40 for the winter term, payable in advance.

They will have the privilege of the Lectures, the use of a commodious office in the neighbourhood of the University, and a valuable Medical Library.

Regular examinations will be held upon the several branches of medical study.

Baltimore, May, 1832.

MEDICAL COLLEGE OF OHIO,

(LOCATED AT CINCINNATI.)

The Lectures in this Institution will commence, as usual, on the last Monday in October, and continue until the last week in February. The following gentlemen compose the Faculty:—

JEDEDIAH COBB, M. D. *Professor of Anatomy and Physiology.*
THOMAS D. MITCHELL, M. D. *Professor of Chemistry and Pharmacy.*
JAMES M. STAUGHTON, M. D. *Professor of Surgery.*
CHARLES E. PIERSON, M. D. *Professor of Materia Medica.*
JOHN MOORHEAD, M. D. *Professor of Obstetrics and Diseases of Women and Children.*
JOHN EBERLE, M. D. *Professor of Theory and Practice of Medicine.*

The last named gentleman will lecture fully on the *Institutes* of Medicine, in the early part of his course; and a distinguished Anatomist has been engaged, to superintend the instructions of the Dissecting rooms.

The entire charge for the course, including the matriculation fee, use of the Library, and the Hospital ticket, is *ninety eight* dollars. The graduation fee is twenty-five dollars.

Good Boarding and Lodging can be had for two dollars and fifty cents per week.

JEDEDIAH COBB, M. D. *Dean of Faculty.*

July, 1833.

CARPENTER'S
CHEMICAL WAREHOUSE,

PHILADELPHIA.

IT is an object of the highest possible consideration with a physician, to obtain medicines which he can always rely upon for genuineness and purity, and which are uninjured by age or exposure.

It is unnecessary to point out the serious disadvantages which practitioners of medicine labour under in the administration of feeble or inert preparations. All their skill and judgment are sacrificed, and talent and experience, if of the highest order, are made level to the least intelligent of the profession, and rendered ineffectual in the treatment of cases which otherwise would have speedily yielded to the salutary influences of pure medicines.

Philadelphia has long very justly claimed and maintained a superiority of standing, and a conspicuous elevation for the brilliant talents of her medical men, and for the scientific knowledge of her Druggists and Apothecaries. The numerous valuable standard works produced by the distinguished professors of her medical colleges and private medical gentlemen of sterling merit, together with the valuable and ably conducted periodicals, are striking characteristics of the correctness of these remarks, and reflect credit upon the country.

With these premises I would beg leave to depart from the usual course pursued in remarking upon my own establishment. I hope my medical friends will indulge me, and I cannot think I will incur the disapprobation or censure of any one in thus departing from the prescribed and arbitrary law of custom, by which much information and valuable knowledge are frequently sacrificed or concealed, to exhibit a true and correct description of my establishment and the facilities with which I am enabled to supply the orders from medical men in all sections of the Union.

I have erected on the ruins of my old stand, (lately destroyed by fire,) a large and commodious four-story warehouse and store, as represented in the annexed plate; and also in the rear of the same lot, a laboratory for the manufacture of the vegetable extracts, proximate principles, and finer chemical products. The buildings have been erected exclusively for the object of the Drug and Chemical business, and every convenience has been studiously observed and faithfully executed in their construction for this object alone.

The retail department of the store is separately constructed, in order that the wholesale business may not interfere at all with it, but that both can be conducted on the most extensive scale, without the one interfering with the other. Thirteen persons are employed inside the store in preparing, compounding, and packing up medicines. The retail part of the store is conducted by six most experienced of the number, who give their entire attention to this department in weekly rotation, by which they easily acquire an intimate knowledge of both branches. The one thus devoted attends to receiving all goods, the examination of bills when presented, and acts as treasurer in receiving monies and the payment of bills, &c.—the transactions of which he daily files an account of.

The first floor of the store is appropriated in part for the retail business, and contains two hundred mahogany drawers; five hundred bottles from two gallon down to quart; one hundred porcelain jars; thirty show-cases, mahogany, with plate glass, all of which are neatly labelled in gold, and appropriated exclusively to the retail department. The depth of this part of the store is thirty feet, and contains four counters, on which are two silver and two brass pair of scales. The ceiling is thirteen feet six inches high, for the distance of thirty feet in depth; it then falls to nine feet, showing an opening near the centre of the store of four feet six inches, finished with facie and railings, in the centre of which is one of Lukens's superior regulated time-pieces, decorated with two dolphins on each side, with a wreath of flowers in the centre, on which is the Hive of Industry, all of which is tastefully carved in wood, and bronzed with gold, combining the valuable and instructive demonstration of *Tempus Fugit*, with a rich and ornamental finish to correspond with the general effect and arrangement of the store. From this point, still on the first floor, commences the wholesale department, which extends further in depth thirty-five feet, making the whole depth in one view of sixty-five feet in the clear. In this department are a further continuation of drawers of larger size, a hatchway stairs, hydrant, &c.—Also, a large counter, twenty feet long and four feet wide, on which are a large pair of brass scales; these scales, as well as those previously described, are manufactured by Mr. John Wilbank of this city. The workmanship and construction of them are very superior; they should be in the possession of every druggist and physician who wishes a superior, neat, and durable article, which will weigh with rigid nicety and exactitude, are easily kept in order, and with little care will always present a beautiful polished surface, and cannot fail in a short time to supersede the worthless articles which have for so long a period, worried and perplexed those who were exact and discriminating for correct weighing, as every man should be under all circumstances, but especially in a business where its requisition is so very important. On the west side of the wall commences the anatomical cases, containing specimens of the various preparations for the use of the student, as wired skeletons, loose bones, arterial, venous, and lymphatic preparations, articulated heads, female pelvis and fœtal heads, and various isolated preparations of the human body, &c. all neatly arranged for exhibition. This is followed by cases of the various kinds of surgical instruments, London and American. The American instruments are now made of very superior quality, and I think may be depended upon as equal to the London, with the exception of the celebrated manufacture of Evans, which I believe are unequalled any where. Immediately following this range of cases is an inscription of rules and regulations of the establishment in which the most important and striking requisitions are conspicuously presented to constant view by gold letters on black ground. This is a valuable expedient in all stores or places of any kind, where a number of persons are engaged, and where the duties and requisitions are of a diversified character, to present to constant view that which is most important to be impressed upon the memory. The next in succession is a medical library for the use of the store, which is followed by a sett of tubes or speaking-trumpets, which communicate with each story of the building, by which sound is regularly conveyed, and a corresponding number of bells follows to call attention to the trumpets when required. In this way, where a large business is done, an exceeding great time is saved, and a facility given to the transaction of business to a far greater valuation than quadruple the cost of construction; any question can be made to those in the fourth story without any great exertion of voice, and an answer conveyed with corresponding facility. Then follows in rotation a fire-proof of large size and new construction, which sad experience has demonstrated the utility of—and no man should build a store without the most scrupulous attention to a fire-proof for the safety and security of his books and valuable papers, in case of a calamity. The draft of the fire-proof was furnished by Mr. Wilbank, and is of a new construction, and possesses several advantages which are not possessed by any other I have yet seen. It has two setts of double doors, and opens four feet wide and six feet high, presenting a broad and full view at one glance of the contents. It is lined all round with iron. The weight of the iron work is about fifteen hundred pounds. Counting-house desks, grates, &c. &c. finish the first floor of the building.

The second story is a continuation of drawers and bottles alphabetically arranged like the first floor, and contains four hundred drawers and eight hundred bottles of various sizes labelled in gold; also counters, scales, &c.

CARPENTER'S CHEMICAL WAREHOUSE.

The third story contains packages of goods opened and placed in bins, holding each one and a half barrel, and arranged in regular rows, six rows in number, and each row extending in depth forty-five feet; also counter and scales, as in the other stories. In this story is also petitioned off a mineralogical room containing a cabinet of near four thousand specimens, neatly arranged in drawers; also a duplicate collection of considerable size for exchanging.

The fourth story contains glass-ware of various descriptions, unpacked on shelves, running on both sides the whole depth of the store sixty-five feet; also packages of goods unopened, arranged in regular rows, with sufficient space between each to admit a person to walk; also a loft of hay, packing boxes, &c. and an improved hoisting machine, by which all the orders put up on the first, second, and third floors, are raised and packed, and again let down when ready to ship or send away. In consequence of a still scarcity of room, it is intended shortly to add another story to the building.

This finishes a brief outline of the construction and arrangement of my store; and I hope I will be indulged to say in conclusion that I give my close personal attention to business, and no article is received into the store without my particular examination, and also those which are sent away; and no article of an inferior quality is either received or sold. I have adapted and laid out all my plans and arrangements of business for supplying the orders of physicians and medical men, and keep no paints, oils, varnishes, dye-stuffs, &c. (which occupy a large proportion of room, and are injurious to the sale of the finer quality of medicines, and should never be kept with them, but made a distinct and separate branch of business,) and therefore can attend more especially to the calls and wants of practitioners of medicine; and as all my pharmaceutical and finer chemical preparations are made in my own laboratory and store, I can of course vouch for their purity and the processes by which they are made. Under these circumstances I feel full confidence in inviting the attention of the Faculty; also country Druggists and Merchants, who are particular about the quality of their medicines. Any orders which are sent to me from merchants or druggists at a distance, in which paints, oils, dye-stuffs, &c. are included, I can have the latter portion of their order furnished as low as any house in this city or elsewhere; for although I do not keep them on hand, or suffer them at all to interfere with my business, where they are included in orders with other articles, I can furnish them through an agent here at the lowest market prices.

It is my intention to keep a very extensive variety and assortment of articles embracing every thing connected with the profession, so that orders for any articles can be readily furnished.

Goods can be forwarded with facility to any part of the United States, and I hope no one will hesitate to send their orders in consideration of the distance, or any apprehension of the safety of their arrival. Insurance will at all times be effected to any part of the United States at a moderate premium.

I have now on my order-books the names of more than twenty-one hundred physicians in various parts of the United States: and I am pleased thus publicly to state, that from nearly every one I have received commendations of satisfaction with the articles sent them, and found in most of them a cordial familiarity and friendship in introducing and recommending their medical friends and acquaintance to me; and have on my part used increased efforts to support and merit the confidence and friendship thus exerted; and for these signal and disinterested services I shall ever feel a warmth of gratitude, and will seek every exertion to reciprocate their favours.

GEORGE W. CARPENTER.

August, 1833.

☞ A Catalogue and description of all the new Medicines and improvements in Chemistry and Pharmacy will be published annually, and distributed gratuitously. Physicians in the country who will forward their address, *post paid*, will be regularly supplied.

The following New Medicines have just been introduced—

G. W. CARPENTER'S
COMPOUND FLUID EXTRACT OF PINK ROOT,
(SPIGELIA MARILANDICA.)

The most effectual Worm-destroying Medicine yet discovered.

There is no disease of so extensive a character among children as Worms, which aggravate all other diseases, and are the chief cause of Fevers, Bowel Complaints, and Chronic and Nervous Diseases incident to Childhood, which are numerous and frequently fatal. It is a fact much to be regretted, that thousands of children are swept off, or are rendered feeble, pale, and emaciated through the first stage of life, which leads on to pulmonary complaints, &c. &c. Most of the remedies made use of for this disease are strong drastic medicines of a poisonous character, which debilitate the stomach, and often materially injure the health of patients. The Oil of Wormseed, which has been recommended and prescribed at present by the Faculty, is so deteriorated by adulteration and mixture, or the product of inferior seed, that no dependence whatever can be placed upon it. The Worm Tea, as it is commonly called, composed chiefly of Pink Root, is made so very inferior, almost wholly of stalks and leaves, that it is almost worthless; and there is no preparation in a convenient form of exhibition which is considered safe and approved of by the Faculty. The Pink Root is considered by all who are acquainted with its properties to be one of the safest and most effectual remedies. There is, however, considerable of that which is sold almost worthless; containing but a small portion of the root, it also requires considerable care and attention in extracting its properties, which is not generally done by those unacquainted with pharmaceutical preparations. Under these circumstances, G. W. Carpenter has thought it advisable to prepare an extract of the Spigelia, combined with several of the vegetable remedies most approved of, for the convenience of the Faculty, particularly those in the country, and he feels assured he will be supported by them in the introduction of this article, whose composition is known and can be prescribed by them in safety and confidence, and will be the means of putting down the various nostrums introduced by the ignorant and inexperienced, and which are productive of serious evils to the community. This article will be carefully prepared of uniform strength, and can be administered with safety to persons under any circumstances.

There is no disease which produces so much disturbance in the system as Worms. Not only do they aggravate ordinary diseases, but they give rise to a great variety of very alarming anomalous affections. The whole train of spasmodic and convulsive diseases may proceed from the irritation of worms in the alimentary canal. Cholera, epilepsy, catalepsy, tetanus, paralysis, mania and convulsions, as well as a variety of other nervous and convulsive affections, are not unfrequently the immediate effects of this cause.

Prepared and Sold, only, by GEORGE W. CARPENTER, at his Chemical Warehouse, No. 301, *Market street, Philadelphia.*

Carpenter's Concentrated Compound of Sarsaparilla, Cubebs and Copaiva.

The above preparation is a combination of the proximate principles of those substances, and are united in such proportions as are usually prescribed for Gonorrhœa, Gleet, Strictures, &c. This preparation has superior advantages over the crude substances, the dose being very small, and not unpleasant to take. It is compounded in the most neat and eligible mode for the convenience of the Faculty, being in a very portable and condensed form, and at all times ready for use, and will keep without injury any length of time. Full directions accompany the preparation.

Prepared and Sold, only, at G. W. CARPENTER'S Chemical Warehouse, No. 301, *Market street, Philada.*

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